Appn. Number: 10/050,193
Appn. Filed 1/16/02

Reply to Non-Compliant Amendment of 11/8/04 and
Office action of 8/8/05

Amendments to the Specification:

Please replace the following specification from page [1 to 13] with the following amended specification page:

Background–field of invention

[1-13] This invention relates to variable or invariable audio enhancing circuits of communication, such as an audio circuit that is provided for enhancing audio signals that derive from an acoustic source of communication, more specifically, an audio circuit for enhancing the acoustic quality of communication systems. The invention further reflects on means for conveying audio signals of communication, such as multiplexing means, analog acoustic transmission and apparatus, digital acoustic transmission and apparatus and coupling methods of communication. The audio enhancing circuit, as described, refers to audio enhancing circuits, such as audio processing circuits and other audio enhancing circuits for providing acoustic enhancement communication procedure of a communication system.

Background--Description of Prior Art

Radio communication is an exiting new concept, but this phenomenon can also bring forth harmful communicational conditions. In referents to the remote mobility that these wireless communication devises provides, it may be reasonable to state under mobile conditions, that wireless telephones are used anywhere from commercial and residential areas to automobiles.

Due to the hazardous conditions that wireless telephones influents when employed under mobile conditions that an automobile provide, there are many laws passed throughout the U.S banning these wireless telephones from motor vehicles, such as U.S public law 100-394, August 16, 1988, which requires handheld communication devices, such as wireless telephones to be coupled with an external hearing aid because of its potential hazard to motorists and pedestrians.

Despite the danger, wireless telephones or telecommunication apparatus have evolved to become a main source of communication. However, in order to bypass some of the occupying distractions and hazardous conditions of communicating during the critical durations that requires vital concentration while operating a motor vehicle or mechanical means, which apparently require sufficient concentration for safe procedure, magnetic coupling hearing aids are adopted to a communicative section in a wireless telephone to facilitate the telephone system by enabling a fluent non-divertive communication procedure in the present of mobile operation.

A prior invention relative to a magnetic hearing aid which accordingly couples with a communication system to aid in the conveyance of audio signals during communication procedures is provided in U.S Patent number 5740257 by Marcus; Larry Allen April 14, 1998, which describes a magnetic coupling hearing aid with active noise control for eliminating noise by generating a representation of the original input signal. Thereby, the acoustic generation is employed to drive an individual external field coil. The external field coil is positioned between the handset receiver and the handset audio output ports for easy access or convenient operation to a user. A receiving apparatus is disposed into the ear cavity for signal response and to drive a magnetic field comprising an interior cavity and an audio output port for inputting signals to an ear cavity having a receiver in said interior for receiving an audio signal and transducer for communicating with said ear cavity.

The plugged-in magnetic hearing aid device that is provided in the prior application is tailored for facilitating wireless telephones, and it includes accessories to accommodate the wireless telephone devices. Though the employment of the magnetic hearing aid of a communication device may be subjective to pedestrians and may relate to motorist, objectively, the method that the present application provides is critical to the facilitation of operating a motor vehicle during the procedure of communication. Therefore, under the terms and conditions that the prior application provides, apparently, this prior art is incapable of possessing the crucial mobile properties, as the preset application, because of the distinctive immobile nature it possesses, which appears to be relegated with secondary-ratings of mobility, in comparison to the mobile coupling method of the present application. In account to the objections of the prior articles of this nature, magnetic hearing aids are used in a wireless telephonic communication device to bypass the occupancy of the wireless telephone devices. However, a user is still occupied with a deflective headphone device plus a handheld wireless telephone device when a magnetic coupling hearing aid is connected to a wireless telephone device for executing mobile operations during the communication procedure.

In consideration of the present article , which facilitates remote communication herein, a coupling method executes a reserve remote way of communicating audio signals to a user in motor vehicles or machinery of mobility. According to the nature of this method that is provided in the present application, substantially, the technical arrangements is applied to enable the user's focus to be centered on the operation of the machine or vehicle instead of the divertive consistence that is objected in the presents of mobile communication and may direct focus only on the conversation while the conductivity of communication is in motion with the operation of the machine or motor vehicle.

Magnetic coupling hearing aids divert attention and may cause hazardous conditions. Therefore, this becomes a negative drawback for the magnetic coupling hearing aid devices.

Technically, the present application is fundamentally designated for the emphasis of quality acoustic communication. The acoustic reproductive elements that are employed for the implementation of perceivable acoustic messages are vital to the object of acoustic communication. However, by any means, most prior art in the narrow field of acoustical communication does not emphasize the fundamental or extensive elements of acoustic quality of telephones, duplex or designated simplex communication systems. Relative articles that does emphasize the acoustic section of a telephonic, duplex or designated simplex communication system are not that concerned with audio quality, efficient performance or general acoustic improvements for at least a reasonable perception during the procedures of communication. However, their attention is directed in extraneous areas, such as recording, networking, generating acoustic signals to interconnect with warning devices, such as, telephone or computer ring tone devices, domestic acoustic interactions which may include selective acoustic interaction, such as access dialing and voice activated access.

An example of a relative article of this extraneous nature of acoustic communication is patent number 4,214,131, in which reflects on the ring tone devices of a communication system. From that aspect , the application recites an audio signal device that is substituted or compensate by integration for the usual electromechanical ringer device of a telephone system. The audio signal device further includes solid-state circuitry for eliminating noise pulses and an electronic oscillator circuit that will operate effectively on a minimum current supply and variable volume control.

In consideration of the extraneous acoustic nature of the prior art application number 4,214,131, it is apparently distinguished from the present application. From that aspect, the provided audio signal device of the prior art application number 4,214,131 is basically interpret as a piezoelectric acoustic generator device that is employed as a tone ringer device. Accordingly, this prior art is distinguished from the present invention in which audio enhancing or audio processing circuits are employed to provide quality audio signals, which consist of conversation or audio communicational massages that are communicated as words or other form of acoustic massages that are not specifically a ring-tone warning but are quality acoustic communication with the ability of magnificent perception, due to the enhanced acoustic quality value thereof. Therefore, these extraneous traditional applications extract the main object of an acoustic communication system. Practically, the fundamental object of communicating over telephone systems or other communication systems is to ensure that conversations can at least be perceived sufficiently without great amount of difficulties. Unfortunately, the fixed rate of poor acoustic quality content of the traditional communication systems or interconnecting prior art of this nature, basically, consists of consecutive components of acoustic deficiencies that possess inadequate intelligibility in these communication applications. However, in account to these relevant objectives, the obsolete acoustic status of the traditional communication system demands modifications. Nevertheless, they have not supplied these demands, under the consideration that good acoustic quality is definitely critical to the definition of good acoustic perception, as for as communication is concern. Therefore, the object of quality acoustic communication may compellingly be addressed only in the specific fields of transmitting and/or receiving provided reasonable acoustic quality communication to and from external existence like a subscriber, user or other communicative devices.

Another related prior art article specified in the field of audio communication is patent number 6,760,323 by Strandberg, filed on July 6, 2004, which recites a system and method that are employed for providing audio communication signals over a communication system, such as a computer network which is interleaved between transmitter and receiver devices using differing communication formats. The system identifies the format of the incoming digital encoded audio data signal, identifies the destination device format of the signal, and converts the data to a second digital encoded audio data signal which is compatible with the format utilized by the destination device. From that aspect, other related prior articles are patent number 5610910 by Focsaneanu et al, filed Mar. 1997, patent number 5768350 filed jun 1998 by Venkatakrishnan, patent number 6134235, 5867494 and 5892764.

According to the presentation of the prior art patent number 6,760,323, the provided system that recognize the destination device format and converts the data to audio data signal which is compatible with the format utilized by the destination device is basically construed as a system that is employed to convert the transmitter's signals to compatible audio signals for consistent communication. Under the provided terms and conditions, this prior art and the other articles of this nature are distinctive from the present application. A number of reason is because, in the present application, variable or invariable audio enhancing circuits are provided to a communication system for enhancing and varying the audio signals of the communication system thereto enhanced acoustic quality value and for arranging the transmission medium for the conveyance of the enhanced audio signals. In this manner, high quality audio signals are provided to a communication system and are able to be communicated over a very narrow medium to improve transmission and acoustical perception of communication herein.

Other prior articles basically recite audio devices, such as filter networks comprising communication systems. From that aspect, these prior articles employs filter circuits for filtering the audio frequency signals, so that they are able to be annualized by analyzer inputs devices that are responsive to audio tones from within a predetermine frequency from an acoustic source of the communication apparatus. These audio devices are basically used in these prior articles to detect a pitch or tone that functions from a keypad or an acoustic source of the communication apparatus, so that the communication apparatus is able to coherently interact by reasoning with the key tone or acoustic source. Therefore, in these prior articles audio signals are predetermined by the acoustic devices for reasoning with the communication apparatus but not for enhancing or processing audio signals in which "telephone quality" audio signals are enhanced to higher quality audio signals within the communication system, as in term of the present application, which is tailored for providing and explicitly broadcasting the enhanced acoustic signals of communication. Moreover, with the present application, the variable articulate-emphasis enables audio communication to be superbly reinforced by specified variations before and during communication. The technicalities that is provided by the prior art is exclusively designated for logical interactions with the communication apparatus but contrastingly differs from the present application. One reason is because it does not at least contain remote acoustic enhancement of the communication system. Hence, the definition of the present acoustic communication application becomes more definite of acoustic enhancement. With the present application, audio signals are extremely processed for perceivable acoustic quality and technical acoustic variation, in which enables accurate communication with precise intelligibility. Therefore, the explicit emphasis of the audio signals are thereby driven to specified regions for executing high quality and efficient communication.

Although multiple extraneous features of wireless telephones or communication systems are nice to have, such as Wireless Web and Voice Activated-Dialing, the main key factors for at least reasonable perception of verbal communication, such as the vital technical elements that implements sound quality that is produced from the audio section of a telephone, Two-way radio or other communication devices are often overlooked or excluded in these applications, and the advantages of these telephones or communication systems usually rely or base on interaction of characteristic displays, logical acoustic selective means, tone generating devices for ring tones, etc. However, these different features do not give a user clear perception of communication.

The provided fundamental and extending elements of acoustic quality, which is especially vital to verbal communication systems, is submitted in the present invention. Herein, audio signals are carefully emphasized thereby improving acoustic qualities and explicitly processing various definite acoustical values for a magnificent communication procedure, which define an ultimate communication system.

Further objects and advantages are to provide at least one ultimate acoustical communication method and to provide improved communicational coupling methods, herein. Audio signals are carefully emphasized to bring the signals to a refined state in a communication apparatus. A person can communicate using a , wireless or handheld communication apparatus more remotely , with little to no hazardous or harmful results.

Magnetic hearing aids or headsets coupled to a communication apparatus occupies a users hearing capacity therefore puts a person at risk to any potential operational hazard.

A major advantage of the present application is its convenient remote communicative feature. With the remote feature hereof, mobile communication can be executed with more harmonic focus. A number of other major object and advantage of this present application is the lineal transmission, ultimate exotic multiplex-technique and technical acoustical emphasis, which has an outstanding impact on the application and includes a degree of variables, which is adopted for decisive acoustic evaluations. Thereby, these special characteristics that are provided in this present article explicitly stresses high class of acoustic quality that are variably predetermine by specified values, or a user.

a) This present phenomenon enables alternative variations of high quality communication signals in a wireless communication device to be distributed to an extraneous audio system.

b) The present article incorporates a variation of variable quality acoustic elements which technically submits a crystal clear quality to communication and enables a user to receive and transmit communication to his or her selected preference.

c) The present article gives motorists and pedestrians an option to operate a communication apparatus safely without breaking the law while varying variable communication signals to their designated values meanwhile communicating, or prior to a cycle of communication.

Drawing Figures

In the drawings, closely related figures have the same numbers but different alphabetic suffixes.

Fig. 1 briefly demonstrates a signal flow chart illustrating a simplex-mode audio enhancement procedure that includes the illustration of original audio signals and three divided bands of enhanced audio signals flowing throughout an entire audio enhancing circuit connected to a communication system which thereby form a simplex mode audio enhancement communication system.

Fig. 2 show an electronic circuit board without any components.

Fig. 3A to 3J provides brief illustrations that consist of schematic diagrams of constituent audio enhancing circuits, such as filter circuits and demonstrates connection procedures to form an audio enhancing circuit and to connect from the formed audio enhancing circuit.

Fig. 4A to 4H briefly shows basic schematic diagrams of control means and illustrates connections to audio enhancing circuits.

Fig. 4D briefly illustrates a battery connection procedure to an audio enhancing circuit such as a crossover network circuit.

Fig. 5A to 5H shows pictorial and schematic diagrams of an integrated coupling medium and illustrates connections.

Fig. 6A shows basic schematic diagrams of audio enhancing circuit connections, which include a 3-way crossover circuit, a preamplifier circuit, and a three-channel connection procedure.

Fig. 6B , Fig. 6E, Fig. 6F and Fig 6G shows schematic diagrams of the output section of a receiver and illustrates preconditioned output connection procedure of external audio port or external audio section to an independent audio reproductive system for the presentation of an external dispensable voluntary communication-coupling procedure.

Fig. 6C briefly illustrates connections from a receiver circuit to displaying means.

Fig. 6D briefly illustrates basic channel connection procedure that may apply for the employment of an audio enhancing circuit, such as a 3-way crossover circuit to audio enhancing circuit, such as a preamplifier circuit and channel connections to communication device, such as a transmitter device, a hybrid network device and a receiver device.

Fig. 7A to 7F demonstrates an external voluntary dispensable coupling method, which illustrates pictorial diagrams of exterior connections from a communication device to a motor vehicle's extraneous reproductive audio system.

Fig. 8 briefly illustrates a basic schematic rough draft diagram of a simplex mode audio enhancement communication procedure which employs one or more audio enhancing circuit connected to a communication system thereby implements an entire audio enhancement communication system.

Fig. 9 briefly shows a basic flow chart diagram of a simplex mode acoustic enhancement communication procedure which employs one or more audio enhancing circuit that is able to produce at least one channel or at least one band consisting of at least one or three second bands of audio signals that flows throughout an entire enhancement communication system.

Fig. 10 A to 10 C briefly illustrates the procedure of external operation of at least one, at least two or at leas three audio enhancing circuits connected to a communication system which thereby implements an acoustical enhancement communication system.

Appn. Number: 10/050,193
Appn. Filed 01/16/2002

Reply to Non-Compliant Amendment of 11/8/04 and Office action of 8/8/05

Amendment to the Specification

Please add the following **new** section of drawing figures to the drawing figure section of the specification after page [13]:

[Page 13.1 etc] Fig. 1A briefly demonstrates a signal flow chart illustrating a two-way or duplex-mode audio enhancement communication procedure that includes original audio signals and three divided bands of enhanced audio signals flowing through at least two audio enhancing circuits that are connected to a communication system which thereby forms a duplex-mode acoustic enhancement communication system.

Fig. 3H to Fig. 3J illustrates novel connection terminals and connection procedure in which a three-way crossover network circuit is converted into a one-way audio enhancing circuit to form an acoustic enhancement circuit, such as a variable one-way crossover network circuit or variable acoustical composite filter circuit for connections to a communication system.

Fig. 8 A shows a schematic rough draft diagram illustrating connections of an entire duplex-mode acoustical enhancement communication system which employs an audio enhancing circuit, such as a crossover network circuit having one control unit, which thereby respectively controls transmitting audio signals and receiving audio signals.

Fig. 8 B shows a schematic rough draft diagram illustrating connections of an entire alternative duplex-mode acoustic enhancement communication system which employs an audio enhancing circuit, such as an audio equalizer circuit having one control unit that respectively controls transmitting audio signals and receiving audio signals.

Fig. 8 C shows a schematic rough draft diagram illustrating connections of an entire alternative duplex-mode acoustic enhancement communication system which employs two stereophonic circuits and provide an alternative stereophonic technique using two summing amplifiers and an inverting amplifier.

Fig. 8D shows a rough draft diagram illustrating connections of a stationary house, residential, commercial communication system or telephone system in which employs an audio enhancing circuit, such as an audio equalizer circuit for the formation of a duplex-mode acoustic enhancement communication system.

Fig. 8 E shows a schematic rough draft diagram which demonstrates connections of an entire duplex-mode acoustic enhancement communication system which employs a variable one-way crossover network circuit or variable acoustical composite filter circuit having one control unit that respectively controls transmitting audio signals and receiving audio signals.

Fig. 8 F shows a schematic rough draft diagram illustrating novel terminal connections of complete duplex-mode audio enhancement communication system.

Fig. 8 G illustrates a schematic rough draft diagram illustrating connections of an entire duplex-mode acoustic enhancement communication system which employs two autonomous control units which are independent to each other and independently controls transmitting audio signals and audio receiving signals.

Fig. 8H and Fig. 8I illustrates a schematic rough draft diagram which demonstrates connections and novel connections of an integrated duplex-mode selective acoustical-enhancement communication system to form a selective 1/3-way crossover/preamp/EQ acoustic enhancement communication system.

Fig. 9A demonstrates a signal flow chart that illustrates one band or one channel of enhanced audio signals flowing through an entire acoustical enhanced duplex-mode communication system and expresses the modification procedure of original audio signals of an acoustic source and a remote communication device.

Fig. 9B illustrates a technical multiplex communication procedure for the conveyance of high quality audio signals on a limited communication spectrum that would commonly band the specific range of signals from the specific communication spectrum from the transmitting end.

Fig. 9C illustrates a technical multiplex procedure for the conveyance of high quality audio signals on a limited communication spectrum , which would normally band the specific range of signals from the specific communication spectrum from the receiving end.

Appn. Number: 10/050,193
Appn. Filed 01/16/2002

Reply to Non-Compliant Amendment of 11/8/04 and
Office action of 8/8/05

Amendments to the Specification:

Please replace the following section of reference numbers from page [14 to 18] with the following amended reference numbers page:

[Page 14-18]

Reference Numeral In Drawings

11	electronic circuit board
14	negative terminal
15	positive terminal
17	audio integrated coupling medium
18	wire conductor
20	capacitor
21	inductor
22	male connector
23	female connector
24	signal flow
25	input terminal
26	output terminal
27	display means
28	preamplifier section
33	transistor-unit

34	high band filter circuit
35	low band filter circuit
36	band-pass midrange filter circuit
37	engagement
38	tweeter
39	midrange speaker
40	woofer speaker
41	communication apparatus
42	filter circuit
43	cross section
44	conductor
45	battery
46	center pole
47	crossover network circuit or audio enhancing circuit
50	one element
51	two element
52	load resistor
53	signal flow

54 IC time circuit
55 variable pole
56 variable pole
57 variable pole
58 variable pole
59 variable pole
60 variable pole
61 audio plug for audio cable
62 reproductive audio system of a motor vehicle or independent reproductive audio system
63 audio input section of a motor vehicle's audio system
64 vcc terminal
65 variable resistor
66 earth ground terminal
67 opposite end
68 bottom end of a communication apparatus

69 one side of a communication apparatus

70 contact point

71 external monitor section or external control section

72 the shell of a plug

73

74 high-range frequency signals

75 midrange frequency signals

76 low-range frequency signals

77

78 external volume switch

79 top of external switch

80 bottom of switch

~~81~~ notch of external switch

~~82~~ knob of variable external switch

83 variable external switch

84 microphone

85 receiver

86 transmitter

87 audio port

Appn. Number: 10/050,193
Appn. Filed 01/16/2002

Reply to Non-Compliant Amendment of 11/8/04 and Office action of 8/8/05

Amendment to the Specification

Please add the following **new** section of reference numbers to the drawing numeral-reference section of the specification in consecutive order after page [18]:

[Page 18.1 etc.]

73 alternative audio enhancing circuit
77 transceiver
88 full range speaker system
89 remote communication audio signals
90 input gain-control circuit
91 high-range frequency-gain control circuit
92 midrange frequency-gain control circuit
93 low-range frequency-gain control circuit
94 variable frequency control circuit
95 threshold control circuit
96 radio frequency amplifier circuit
97 demodulator circuit
98 audio amplifier circuit
99 stereophonic circuit or audio enhancing circuit
100 audio equalizer circuit or audio enhancing circuit

101 first communicative channel of audio enhancing circuit

102 second communicative channel of audio enhancing circuit

103 1.3-way crossover network circuit, digital/analog frequency divider circuit or audio enhancing circuit

104 hybrid network

105 anonymous or poor quality remotely communicating signals

106 enhanced signals

107 antenna

108 remote transmitter

109 remote receiver

110 a first external monitor section

111 variable external bandwidth / millisecond-control circuit

112 a second external monitor section

113 variable external treble control circuit

114 variable external bass control circuit

115 variable external high frequency range control circuit

116 variable external band-pass range frequency control-element

117 variable external low frequency range control-element

118 variable external dB gain control-element

119 selection switch

120 external variable sub-master control circuit

121 internal control unit

122 stationary communication system

123 internal variable master control circuit

Appn. Number: 10/050,193
Appn. Filed 01/16/2002

Reply to Non-Compliant Amendment of 11/8/04 and
Office action of 8/8/05

Amendments to the Specification:

Please replace this section of the specification page [19 to page 46] with the following amended section of the specification:

Detail Description

[19-46] In the illustration Fig. 2, an integral portion of content for electronic integrated elements embark on a circuit board, **11** which is the base of filter circuits or audio enhancing circuits according to the provided application. It is an electronic circuit board made of a plastic material or semi-conductive silicone materials. The board is 2x2 in length and 2x2 in width and it is employed to integrate electronic elements during the composition procedures of audio enhancing circuits and connections thereof. The circuit board may be miniaturized into a micro chip for a better enclosure or it may be modified to various dimensions or formations and tailored to encompass relative applications of the present nature, depending on the criteria of the application thereof.

The following specification refer to an audio enhancing circuit, such as an audio enhancing circuit that is designed for enhancing audio signals or original audio signals that derive from a source of interest, such as at least one acoustic source which may be vocal acoustic source. Said audio enhancing circuit is an audio processing circuit, such as an audio equalizer circuit or other audio circuit that enhances audio signals, such as a crossover network circuit in which enhances said originals audio signals to refine acoustic value or perimeter for the conveyance of the enhanced audio signals for means of enhanced acoustic communication. Furthermore, said audio enhancing circuit consist of at least one audio input port or at least one audio input section that is capable of inputting said original audio signals from said acoustic source to said audio enhancing circuit, and further said audio enhancing circuit is able to be integrated with other audio enhancing circuits herein. Therefore, the integration of said audio enhancing circuit is capable of implementing comprehensive audio enhancement communication procedure thereof. For the conveyance of high quality audio signals herein, multiplexing technique may apply, as stated in the subsequent section hereof. Under the provided terms, the description Fig. 3E illustrates an audio enhancing circuit, such as said crossover network circuit connecting to the input port for the correspondents of said original audio signals from said acoustic source, such as a microphone. The microphone then outputs signals that thereby emits to said crossover network circuit. Thus, the communication procedure employs the enhanced audio signals with the corporation of the audio enhancing circuit that process the signals to refined degrees according to variable technical arrangements herein. This procedure implements a mode that communicates enhanced acoustic signals in at least one direction. Therefore, this method is entitled, *The Simplex-mode Acoustic-Enhancement Communication Method.*

Fig. 3E illustrates an input-port **87** for inputting said original audio signals from the output section of the microphone thereby connecting said original audio signals from said output section of said microphone to the main input **25** of a high band-pass filter circuit of a crossover network circuit. From the positive terminal **15** of the high band-pass one-element filter circuit, a contact is made to a conductor **44**. From the opposite end of said conductor, a contact is made to the positive terminal **15** of the input-port **87** for inputting said original audio signals of said microphone. From the negative **14** terminal of the same input-port, a connection is made to the negative terminal of said high band-pass one element filter circuit.

Fig. 4D illustrates the connection of a 5-volt battery from the power source of a communication apparatus to a crossover network circuit or audio enhancing circuit. The positive terminal **15** from a one-element high band-pass filter circuit is connected to a conductor. At the opposite end of said conductor, a contact is made to the positive terminal of a 5 volt battery **45**. The negative terminal **14** of the same battery is connected to a conductor. From the opposite end of the same conductor, a connection is made to the negative terminal of a one element low band-pass filter circuit.

Fig. 3C shows a schematic diagram of three band-pass filter circuits and illustrates the formation of a crossover network circuit, which is provided to this application as an audio enhancing circuit tailored for the incorporation of a communication apparatus. A one-element high band-pass filter circuit **34** lay adjacent to a two-element **51** band-pass midrange series filter circuit **36**. A one-element low band-pass filter circuit **35** lay adjacently below the one-order high band-pass filter circuit and the two-order band-pass midrange filter circuit. In the illustration Fig. 3C and 3A, the elaboration of constituent elements expresses the constitution of an audio enhancing circuit, such as a 3-way crossover network circuit. From one end of an inductor from the low band-pass filter circuit's positive terminal, **15** an intersection is made, crossing **43** the negative conductor **44** of the band-pass two-element mid-range filter circuit and makes a connection **70** at the positive terminal **15** of said band-pass two-element midrange filter circuit and comes in contact with one side of a series coupled inductor **21**.

From the same contact **70** point of the band-pass filter circuit, another intersection is made crossing **43** a second negative conductor **44** of said high band-pass one-element **50** filter circuit and making contact **70** at the circuit's positive terminal **15** and one side of a capacitor. From the negative terminal **14** of the same low band-pass one-element filter circuit, a connection **70** is made to the negative conductor of said band-pass two-element midrange filter circuit. From the negative conductor's connection point **70** of said band-pass two-element midrange filter circuit, a second contact is made to the negative terminal of said high band-pass one-element filter circuit, by the main input terminals of said crossover network circuit herein.

Fig. 3A shows a formed crossover network circuit and demonstrates the flow of audio signals. A three-way crossover network **47** is then formed, leaving a main input section **25** at the high band-pass one-element filter circuit's terminals or the low band-pass filter circuit's terminals. From the main input section of the crossover network circuit, output signals **26** flow **53** to the opposite side of the circuit's terminals, as illustrated in Fig. 3B, in which illustrates, low-range audio signals **76** outputting at a low band-pass one-element filter circuit, the high-range signals **74** outputting at a high band-pass one element filter circuit and the midrange signals **75** outputting at a two-element high band-pass filter circuit.

Illustrative Fig. 4H illustrates a method of constituting control means in an audio enhancing circuit, such as a crossover network circuit which incorporates a communication system in which thereby enables the acoustic enhancement communication system to tune and control audio signals while communicating said audio signals to a corresponding communication system therein. At least one of each control element may apply to this application as follows: a variable input dB gain control circuit **90** connected to the main input terminals of the crossover network circuit for varying the gain of input signals, a variable millisecond delay control circuit **54** connected to said crossover network circuit, a variable low dB gain control circuit **93** connected to a section of the low band-pass filter circuit **35** for varying the gain of low band range audio signals, a variable low-range frequency control circuit **94** connected to the low band range filter circuit whereby varying the frequency range of low-band pending audio signals thereof, a variable high frequency gain control circuit connected to a section of the high band-range filter circuit **34**, a variable mid frequency gain control circuit **94** connected to the two element mid band-pass filter circuit **36** for varying the gain of mid-band range audio signals, a high frequency dB gain control circuit **94** connected to the one element high band-pass filter circuit for varying the gain of high range audio signals, a variable master dB gain control circuit **123** connected at the output of the crossover network circuit and a threshold dB control circuit connected to said crossover network circuit. Fig. 4E shows a switch, an IC chip, control means and illustrates the constitution of an integrated control circuit of an audio enhancing circuit, such as a crossover network circuit. The center pole of a switch is connected to a MF8 IC timer. The diagram in Figs. 4A to Fig. 4G illustrate connections of a switch and an IC chip timer. From a positive 5-volt terminal, **15** contact **70** is made to the center-pole **46** of a multi-position rotary switch. From an output section of the IC timer **54**, a contact is made to the conductor of a male connector. The male connector thereby engages **37** with a female connector.

From the opposite end of the same female connector's conductor, **44** a contact is made to one side of a tunable resistor **65**. From the connection point **70** of the tunable resistor, a connection is made to the positive terminal **15** of a one-element high band-pass filter circuit. From the output section of a one-element low band-pass filter circuit, a connection is made to the opposite side of the same tunable resistor then to a conductor of a male connector. The male connector then engages with a female connector. The female connector's conductor then makes a contact **70** to the negative **14** output terminal of the same acoustic IC timer chip.

The multi–position rotary switch connections are voluntarily provided to the one-way communication method and the multi-position rotary switch and its connections are not important elements of the control means, control units, the audio enhancing circuits or this application in its entirety. Therefore, due to it's inessential characteristics that may apply with the employment of said multi-position rotary switch, as result, employment of the rotary switch in the audio enhancement communication system may be completely omitted from this application in its entirety. Thereby, the communication procedure retains the ultimate variable or invariable audio enhancement communication system herein. Fig. 4 A illustrates a multi-position rotary switch connecting at the input of a crossover network circuit for the variation of operational adjustments within a communication system and the crossover network device. Horizontally to the right from the center pole **46**, a variable pole **55** using a conductor, **44** makes a contact **70** to the negative input terminal **14** of a low band-pass **34** one element filter circuit. From the positive terminal **15** of the same low band-pass filter circuit, a conductor makes a connection at it's opposite end to a variable pole, which is pole number **56**, the pole that is adjacent to pole **55**. The pole that is vertically upward from the center pole **46** is pole **57.** From a conductor, pole **57** makes contact with the negative terminal **14** of a band-pass midrange **36** two element **51** filter circuit.

From the positive input terminal **15** of the same, two order band-pass midrange filter circuit, **36** a conductor makes contact with a variable pole adjacent to pole **57**, which is pole **58**. From a conductor, a pole **60** horizontally to the left from the center pole **46** makes contact to the conductor's opposite end then to the positive input terminal of a high band-pass one element **50** filter circuit. A variable pole **59** that's adjacent to pole **60** then makes contact from a conductor's end to the negative terminal **14** of the same high band-pass one element filter circuit thereby forming a section of the control means thereof.

In the illustration Fig. 3F, the diagram consists of more than one audio channel and illustrates a connection method, thereby demonstrating connections from a crossover network circuit or an alternative audio enhancing circuit, **73** as a primary audio circuit, to an audio preamplifier circuit **28**. According to this acoustic communication system, as recited, an audio equalizer circuit or other audio enhancing circuits may be individually adapted in substitute of said crossover network circuit, or additionally, the acoustic communication system may simultaneously be integrated with other audio enhancing circuits. In this context, said audio preamplifier circuit is able to be positioned as a primary audio enhancing circuit. Therefore, the application is able to subsequently position said audio equalizer circuit and said crossover network circuit thereby respectively configuring the enhancement procedure of said audio signals for the generation of subjectively-arranged, perceivable, quality communication signals hereof.

Fig. 3D illustrates a three divided channel connection-procedure from the output of a crossover network circuit. Fig. 6A illustrates connections to the input of an audio preamplifier circuit from a crossover network circuit. This *one-way acoustic enhancement communication method,* may employ the preamplifier circuit, which is utilized hereafter to input enhanced pre-amplified audio signals into a transmitter, as the primary audio enhancing circuit inverse to the technical arrangements of the one-way audio enhancing method, as stated below. Therefore, the application would practically initiate the procedure with said preamplifier circuit as the first audio enhancing circuit then the crossover network circuit as the second audio enhancing circuit. Conformably, with respect to controversial reasoning, said preamplifier circuit may be completely extracted from this one-way audio enhancing communication method to comply with the presented criterions of the designated application. Fig. 3C shows an input point and output points in said crossover network circuit. Together, illustration Fig. 3C, Fig. 3D, and Fig. 6A shows output and input connections whereby constituting a connection method for communicating enhanced audio signals to a communication system. From the positive **15** output terminal of a high band-pass **34** one-element filter circuit, contact is made to the conductor of a male connector **22.** From the same male connector, an engagement is made with a female connector **23.**

From the female connector's conductor, a contact is made to the positive input base terminal **15** of a transistor-unit **33** at the first channel of the audio preamplifier circuit. From the input negative earth ground terminal **66** of the same transistor-unit of said audio preamplifier circuit at said first channel, a contact is made to the conductor of a female connector **23.** From the same female connector an engagement is made with a male connector **22**. From the same male connector's conductor, **44** a contact is made to the negative output **26** terminal of the one-element high band-pass **34** filter circuit. From a second channel at the positive terminal **15** of an input load resistor **52** of a second transistor-unite of said audio preamplifier circuit, a contact is made to the conductor of a female connector **23**.

From the female connector, an engagement is made with a male connector **22.** From the same male connector's conductor, a contact is made at the output **26** positive terminal **15** of a two-element band-pass midrange filter circuit **36**. From the negative output terminal **14** of said band-pass two-element midrange filter circuit, a contact is made to the conductor of a male connector. From the same male connector, an engagement is made to a female connector **23.** From the same female connector's conductor, a contact **70** is made at an earth ground **66** negative terminal of the second audio transistor-unit **33** of said second channel of said audio preamplifier circuit.

From a third transistor-unit **33** of a third channel of the same audio preamplifier circuit, a contact is made from the positive terminal **15** of said second transistor-unit at the base input terminal in said audio preamplifier circuit to the conductor of a female connector. From the female connector **23,** an engagement is made to a male connector **22**. From the same male connector's conductor, contact is made at the positive terminal of a low band-pass **35** one element filter circuit. From the same low band-pass one-element filter circuit's negative output **26** terminals, a negative connection **70** is made to the conductor **44** of a male connector. From said male connector, of the low band-pass filter circuit an engagement is made with a female connector. From said female connector, a connection is made to an input earth ground negative terminal of said third transistor-unit of said third channel of said audio preamplifier circuit.

In reference to lineal acoustic band or channel configuration, a subsequent method is provided hereafter, which is entitled *The Digital Lineal Value-1 Downward-Modification Technique*, in which explicates the lineal technique of a prospective application where, the employment of three or more bands of audio signals may alternatively be substituted with conservative technique that provides at least one audio enhancing circuit employing an at least one serial transmission channel, or an at least one serial transmission channel, of which employs at least one value and/or band of audio tone and channels the one or more bands of audio signals, which derive from the same acoustic source. Therefore, the one band of audio signals is capable of being employed in substitute of the at least three parallel (analog) bands or channels of audio signals. Whereby, the one serial-transmission channel respectively communicating the at least one enhanced-band of audio signals to a secondary audio enhancing circuit or an audio reproductive circuit of a communication system. Thereby, driving at least one full range speaker or virtually driving a multi-range speaker system, as if it is a common three-way crossover network, two-way crossover network or other frequency divider circuit. On the other hand, as stated thereafter, the audio enhancing circuit that is employed in this following diagram, implements three bands of enhanced audio signals which, thereby emphasizes three parallel acoustic fields herein. From the technical aspect, Fig. 1 briefly illustrates a plurality of band audio signals produced from a 3-way crossover network circuit flowing throughout an entire one-way acoustic enhancement communication system in at least three channels, and Fig. 6 D illustrates connections of this nature. From a microphone **84**, as illustrated in Fig. 1, audio signals flow to a 3-way crossover network circuit. From said 3-way crossover network circuit **47**, at least three bands of audio signals are injected into an audio preamplifier circuit.

From said audio preamplifier circuit **28**, as illustrated in connection Figure 6D, high frequency band of output signals **74**, demonstrated in Figure 1 flow chart, are connected to an input channel of a transmitter **86.** From a mid-range band of output audio signals **75** from said audio preamplifier circuit, a second connection is made to a second input channel of said transmitter. From a low band range of output signals **76**, a third connection is made to a third input channel of said transmitter. From the output section of said transmitter, the three bands of audio signals are connected to the input of a hybrid network **104**. From the output section of said hybrid network, said three bands of audio signals are then respectively connected to the input of a receiver **85.** The three bands of signals that are connected from the output section of said hybrid network are received as passively enhanced audio signals that are provided for a side tone hereof.

Fig. 1 roughly illustrates a diagram of a one-way or a simplex-mode acoustic enhancement communication procedure consisting of an audio enhancing circuit that generates three bands of enhanced audio signals which thereby flow throughout the selectable components of the communication system for producing explicit audio signals thereof. Said communication system also consists of a hybrid network that is employed for producing a side tone in said communication system. In this manner, the box diagram of the illustrative figure demonstrates the flows of signals from an acoustic source, such as a transducer **84**. From the output section of the microphone, plain or original audio signals are injected into a primary audio enhancing circuit, which happens to be a 3-way crossover network circuit that hereby produces three parallel-bands of enhanced audio signals, a band of high-range audio signals, a band of midrange audio signals and a band of low-range audio signals. From the output section of said 3-way crossover network circuit, the three bands of crossover audio signals are respectively injected into three channel of an audio preamplifier . From the output section of the preamplifier, the three bands of pre-amplified audio signals respectively flows into three input channels of a transmitter. From a first output channel of said transmitter, high-range band of audio signals from said transmitter flows to a first input channel of said hybrid network then outputs into a first input channel of a receiver. From a second output channel of said transmitter, midrange band of audio signal flows to a second input channel of said hybrid network. From a second output channel of said hybrid network, said midrange band of audio signal flows to a second input channel of said receiver. From a third output channel of said transmitter, a low-range band of audio signal flows to a third input channel of said hybrid network herein. From a third output channel of said hybrid network, said low band range of audio signals then flows to a third input channel of said receiver hereof. Fig. 6C illustrates display means respectively coupling to said receiver and Fig. 1 further illustrates a block diagram of signal flowing throughout the communication system therein respectively flowing through said displaying means which results with the capabilities of exhibition for balancing and monitoring acoustic levels herein. In Fig. 6C, a display apparatus **27** is coupled respectively to the transistors of the receiver thereby displaying the status of the audio signals of said communication system herein.

Fig. 6D Shows a schematic diagram of a transceiver that illustrates a three channel connection procedure, which may be consequently employed for connections that follows the employment of an audio enhancing circuit that may consist of more than one channel in parallel, such as a 3-way crossover network circuit. In that respect, the diagram briefly demonstrates inside connections from an audio preamplifier circuit to the input of a primary audio circuit of a transmitter and from the output of said transmitter to a hybrid network and out from said hybrid network and into a receiver. In the illustrative description, connections initiate from a secondary audio enhancing circuit , which happens to be an audio preamplifier circuit **28**. From the audio enhancing preamplifier circuit, output channels are connected to a transmitter **86**. Fig. 6D illustrates connections of the further elaborate terms as follow. From a first channel of said audio enhancing preamplifier circuit, a positive input connection is made to the positive **15** base terminal of a transistor-unit, of said primary audio circuit, such as an audio amplifier circuit in said transmitter. From said first channel of said audio-enhancement preamplifier circuit, a negative **14** input connection is made to the earth ground terminal **66** of the same transistor-unit of said primary audio circuit of said transmitter. From a second output channel of said audio enhancing preamplifier circuit, a positive input connection is made to the base terminal of a second transistor-unit of said primary audio circuit of said transmitter.

From said second output channel of said audio enhancing preamplifier circuit, a negative input connection is made to the earth ground **66** terminal of said second transistor-unit of the transmitter section. From a third output channel of said audio-enhancement preamplifier circuit, a third input connection is made to the positive base terminal of a third transistor-unit of said transmitter section. From said third output channel of said audio-enhancement preamplifier circuit, an input connection is made to a ground terminal of said third transistor-unit, of said transmitter section. From the output section of the transmitter, three output channels of the transmitter are respectively connected to three input channels of a hybrid network.

Fig 6D illustrates an audio input connection procedure from three out channels of the hybrid network to three input channels of a receiving section. From a first output channel of the hybrid network, a positive **15** input connection is made to the base terminal of a transistor-unite of the receiver **85**. From said first output channel of said hybrid network, a negative input connection is made to the earth ground terminal **66** of the same transistor-unit of said receiver. From a second output channel of said hybrid network, a positive input connection is made to the base terminal of a second transistor-unit of said receiver. From said second output channel of the hybrid network, a negative input connection is made to the earth ground terminal of said second transistor-unit of said receiver. From a third output channel of said hybrid network, a third input connection is made to the positive base terminal of a third transistor-unit of said receiver.

A connection is then made from the same third output channel of said Hybrid Network to another input ground terminal of said third transistor-unit of said receiver herein. In the diagram Fig. 6D, a schematic rough draft provides the illustration of a transceiver, constituent sections, a receiver or a segment of said receiver and diverse view of segment of the communication system in which enhanced audio signals flows from the output terminals of the receiver to a speaker system.

Fig. 1 and Fig. 3F illustrates diagrams of a signal flow chart showing signals flowing from the output section of a receiver to three separate band ranged speakers thereof. From an output channel of the receiver section, high frequency audio signals are connected to a tweeter **38**. From a second output channel of said receiver section, midrange frequency audio signals are connected to a midrange speaker **39**. From a third output channel of said receiver section, low range frequency audio signals are connected to a woofer speaker **40**.

An external dispensable port or external-acoustic connection implements a dispensable coupling method, which is entitled, ***The Reconcilable Voluntary Dispensable Coupling Method***. This extraneous coupling-method is briefly expressed in the following interpretations. Illustration Fig. 6B , Fig. 6E, Fig. 6F and Fig 6G demonstrates connection procedure, which is precondition according to the conditions that an audio enhancing circuit provides. For instance, a 3-way crossover network produces 3 bands of audio signals. Therefore, Fig. 6E illustrates the specified coupling arrangements of this manner etc. Accordingly, connections are made from an autonomous indispensable receiver section of a communication system to an external dispensable output-section, audio port, or a wireless acoustic system having said output audio section adapted for the voluntary coupling procedure that incorporates an audio reproductive system of a motor vehicle or other independent audio reproductive systems with a communication apparatus thereof. From the positive **15** output terminal of a transistor of a receiver section, a connection **70** is made to a series capacitor. At the opposite end of said series capacitor, contact is made to the positive terminal of the dispensable output port **87** of the receiver. From the negative terminal **14** of said dispensable output port, a conductor **44** comes in contact with an earth ground terminal in said receiver.

Fig. 5A to 5G. shows an audio cable comprising an integrated circuit adopted to couple externally with a communication apparatus and oppose a band of frequency. Wherein, a right side conductor wire is parallel to a left side conductor wire and they both flow in a separate parallel motion, having one side of the circuit conducting low range frequency and the other side conducting high range frequency. Internally, the integrated cable consists of two wires, which runs parallel until the output plug contact points. The cable further consists of two separate filter circuits adjacent to each other. Said integrated circuit is an insignificant segment of said audio cable. Therefore, the integrated circuit is not essential to said audio cable. Consequently, an alternative method of coupling the cable from said communication apparatus to an external reproductive system may exclude or omit said integrated circuit from the application. Thereby, said audio cable will be able to be employed as an independent entity, and completely eliminates said integrated circuit from the coupling method or application herein.

Fig. 5A to 5G. illustrates connection procedure of the audio cable comprising the integrated filter circuit which is able to couple externally with a communication apparatus. From the left side of a plug, a conductor wire **18** makes contact to one end of an inductor. A second conductor wire makes a contact from the opposite end of said inductor **21** to the left side of a second plug. From the right side of said second plug **61,** a conductor wire **18** makes contact to one end of a capacitor. A second conductor then makes contact to the opposite end of said capacitor. At the opposite end of the same conductor-wire, a connection is then made to the right side of the first plug **61**.

Fig. 9 Illustrates a rough draft view of an audio signal flowchart demonstrating one band or one channel of audio signals communicating throughout an entire acoustic enhancement communication system. The method of one band or one channel communication employs, a unique 1.3-way tunable crossover network or tunable serial-transmission frequency divider circuit having only one output channel whereby producing only one channel of plural band enhanced audio signals for communicating the enhanced audio signals to a communication system. Thereby, the one-way tunable crossover network or tunable serial-transmission frequency divider circuit, herein, driving at least one speaker system, which depends on the arrangement of the application hereof. Signals flow **53** from the output-section **26** of a microphone **84** then throughout the acoustic enhancement communication system. Horizontally to the right of said microphone is a one-way crossover network circuit or tunable serial-transmission frequency divider circuit. From the output section of said microphone, original audio signals are sent to the input port **87** or input section of the 1-way crossover network circuit or tunable serial-transmission frequency divider circuit **103** which consist of a 3-way crossover network, and a serial transmission IC timer circuit. From then on, the original audio signals are generated into three, then one multi-band or one multi-channel of enhanced audio signals. The one band or one channel of filtered enhanced audio signals that emit from said 1-way crossover network circuit or tunable serial-transmission frequency divider circuit is then applied to the input of an audio preamplifier **28**. Horizontally to the right of said audio preamplifier is an adjacent transmitter section **86** that is enclosed with an adjacent receiver in a transceiver device. The one channel of enhanced pre-amplified audio signals that output from said audio preamplifier is then injected into said adjacent transmitter section. From the output section of the transmitter, said one channel of enhanced audio signals is injected to the input of a Hybrid Network **104**. Vertically to the left of the adjacent transmitter device **86** is the adjacent receiver section. **85** The one channel of multi-band audio signals from the output of said Hybrid Network are respectively injected to the input of the receiver section, Whereby, the received enhanced audio signals drives at least one full range speaker or a speaker system of the communication system. However, providing that, said receiver section consist of an integrated retrieval circuit at the end audio circuit of said receiver that is able to retrieve the parent divided band of audio signals which was produced by the preceding 3-way crossover network circuit that was arranged to produce and output the divided bands of audio signals to the IC timer circuit then to said receiver section that includes the integrated retrieval circuit, thereby, retrieving the received enhanced audio signals that drives at least one speaker system of the receiver hereof.

Downward from said adjacent receiver section **85** is an acoustic integrated medium **17**, which is dispensable to said adjacent receiver section and is voluntarily adopted to conduct said one band or one channel of enhanced audio signals from an external-dispensable output audio-port **87** which is employed to the receiver for coupling to an input audio port **63** of a motor vehicle's acoustic reproductive system. Therein, the one band or one channel of enhanced audio signals are reproduced then output to at least one full range speaker or a speaker system of the motor vehicle.

Appn. Number: 10/050,193
Appn. Filed 01/16/2002

Reply to Non-Compliant Amendment of 11/8/04 and Office action of 8/8/05

Amendment to the Specification

Please add the following **new** section of the specification after page [46]:

[Page 46.1 etc.] Under the provided terms of the entire encircled application, in addition to the conveyance of high quality audio signals which may exceedingly range out of the specified limits of a specific communication spectrum, analog (FDM) or digital (TDM) multiplexing technique may be employed to suit this high quality application which is able to communicate vocal signals or acoustic signals containing professional acoustic quality hereof.

The present terms relates to a second method of acoustical enhancement communication, which comprises at least one audio enhancing circuit having at least one acoustic input section for inputting original audio signals from at least one output section of an acoustic source, and the at least one audio enhancing circuit is capable of processing the original audio signals to enhanced acoustic quality value in comparison to an acoustic quality value of the communication system. Said audio enhancing circuit employs at least one communication channel or two communication channels which consist of balanced control unit or unbalanced control units. Said at least one audio enhancing circuit further employs the communication system for communicating enhanced audio signals in a simplex-mode or duplex-mode depending on the selected communication channel thereof. This method is entitled, ***The Simplex/Duplex Acoustic Enhancement Communication Method***. The essential mode of providing and communicating enhanced audio signals may be the duplex-mode, which employs a duplex communication system or the simplex mode which is able to employ said duplex-communication system for communicating said enhanced audio signals hereof. The simplex/duplex acoustic enhancement communication method may be perceived as a preferred embodiment or imperative aspect, hereof, due to the advance full-duplex enhancement communicational advantages that the duplex communication method provides.

Fig. 8 A and Fig. 8 F shows schematic rough draft diagrams illustrating connections of an entire duplex-mode acoustic enhancement communication procedure that is able to employ a 3-way crossover network circuit as the audio enhancing circuit which is able to employ one control unit that is capable of respectively connecting to said two communicative channels of said at least one audio enhancing circuit. Thereby, said one control unite is able to respectively controls transmitting audio signals and receiving audio signals herein. Furthermore, Fig. 8 F shows a schematic rough draft diagram of the two-way acoustic enhancement communication mode in which the emphasis of integral circuits hereof is illustrated by distinction. The diagram views the meeting points of positive **15** and negative **14** terminal-connection of the entire acoustic enhancement communication system.

The schematic illustration Fig. 8 A and Fig. 8 F also illustrates the concept of audio signal modification of the two-way acoustic enhancement communication procedure in which provides a communication system comprising at least one audio enhancing circuit, such as the 3-way crossover network circuit **47,** which employs said two communicative channels of said audio enhancing circuit. The first communicative channel **101** of said audio enhancing circuit is able to channel acoustic enhancement communication procedure from an acoustic source, such as a microphone to a transmitter. Said first communicative channel of said audio enhancing circuit subsequently outputs the channel of enhanced audio signals to a transmitter for the transmission of the enhanced audio signals from said first communicative channel of said audio enhancing circuit.

The second communicative channel **102** of said audio enhancing circuit is connected to a section of an adjacent receiver, which thereby commences receiving the second acoustic communication enhancement procedure hereof. Audio signals which emit from a remote communication device therein containing indefinite, anonymous, poor or impaired audio quality **105** are capable of being received in another section of said adjacent receiver, which thereby subsequently submit the anonymous or impaired quality signals to said second communicative channel of said at least one audio enhancing circuit. Then the remotely communicated audio signals are received as enhanced communication audio signals. In this manner, the acoustical enhancement communicational procedure of said at least one audio enhancing circuit thereby magnificently improving **106** said anonymous, impaired or indefinite signals from said remote communication device thereof. This simplex/duplex acoustic enhancement communication mode is able to employs the first control technique entitled, ***The Communicative Equilibrium Control Technique***, which enables the control of said two communicative channels in which said enhanced audio signals are able to be respectively monitored and tuned to equivalent predetermine settings while transmitting and receiving communication herein. The communicative equilibrium control procedure acquires the employment of an audio enhancing circuit, such as a crossover network circuit or other audio enhancing circuit having said two communicative channels which enables the channeling of communication signals therein. The communicative channels of the encircled application herein consist of an input section and an output section in which signals flow throughout and make subsequent channel connections thereof. Said two communicative channels extinguish communicational conflicts between the signals of the transmitting enhancement procedure and the signals of the receiving enhancement procedure hereof.

Fig. 8 A and Fig. 8 F further illustrates schematic initiation of the duplex-mode acoustic-enhancement communication connection-procedure. To commence the simplex/duplex acoustic enhancement communication mode, the input section of communicative channel one is connected to output signals from the acoustic source, such as a microphone **84**. Original audio signals from said acoustic source or said microphone are injected into at least one input port **87** or at least one input section **25** of said communicative channel one **101** of said audio enhancing circuit, in which commence an acoustic enhancement communication procedure hereof. The output section of said communicative channel one is thereby connected respectively to the input section of a transmitter **86.** Therefore, said communicative channel one then channels the enhanced audio signals into the transmitter, and said transmitter then transmits the enhanced audio signals from said communicative channel one of said audio enhancing circuit therein. Said transmitter then respectively injects said enhanced audio signals into a hybrid network which then passively emits said enhanced audio signals into an adjacent receiver **85**. From the output section of an integral circuit of said adjacent receiver, said communicative channel two of said audio enhancing circuit makes a connection to the input section of said communicative channel two of said audio enhancing circuit herein. The receiver thereby receiving a second process of enhanced audio signals from said communicative channel two of said audio enhancing circuit which thereby refine the value of impaired audio signals that emits from a remote communication device herein. According to the aspect of the equilibrium control technique, said communicative channel one further consists of control means for respectively controlling and tuning said communicative channel one and said communicative channel two equivalently. Thereby, both communicative channel number one and communicative channel number two shares equal control of the same control unit **121** thereof. Therefore, adjustments and setting of said communicative channel one is equivalent to the adjustments and setting of said communicative channel two thus respectively enabling equal capabilities of the impending, pending or advanced audio communication signals within the system. In this manner, transmittable and receivable audio signals are able to be coordinated during the communication procedures which assertively gives a user the practical acoustic evaluation or assurance that the actual acoustic values that are transmitted from said transmitter are identical to the anticipated acoustic values or adjustment of reception hereof.

In illustration Fig. 4H, control means are provided in arrangement to suit said audio enhancing circuit in respect to the arrangements of said control means or integral elements of the communicative equilibrium control technique, which is tailored to suit said audio enhancing circuit, such as said 3-way crossover network circuit, and the control means are provided for controlling audio signals in submission of a user's authority. At least one of each control element is applied to this application as follows: a variable input gain dB controlling circuit **90** connected to the main input of said 3-way crossover network circuit for varying the input gain or of said crossover network circuit or communication system thereby variable the input signals hereof, a variable millisecond delay control circuit **54** connected to said 3-way crossover network circuit, a high frequency dB gain control circuit connected to the output of the high band range filter circuit of said crossover network circuit, a second variable frequency range control circuit **94** connected to the output section of a first order high band-pass filter circuit **34** in said 3-way crossover network circuit for varying high-range frequencies of the high band-pass filter circuit, a variable midrange frequency gain control circuit **92** connected to the output of a two order band-pass midrange filter circuit **36** of the crossover network for tuning the gain of the midrange filter circuit, a third variable frequency range control circuit **94** connected to the output section of said two order band-pass midrange filter circuit in said crossover network circuit for varying the midrange frequencies of the mid band-pass filter circuit, a variable low frequency dB gain control circuit **93** connected to the output of the low band-range frequency filter circuit **35** of the same 3-way crossover network device, a third variable frequency range control circuit **94** connected to the output section of the first order low band-pass filter circuit of said crossover network circuit for tuning the low-range frequencies of the low band-pass filter circuit, a threshold dB control circuit **95** connected to the same crossover network device and a master level control circuit **123** connected at the output section of the audio enhancing circuit or crossover network circuit. Said control unit is then connected to said second communicative channel which employs the control means for controlling the second channel of audio signals, which thereby emits to at least one subsequent circuit of the communication system.

Fig 8 G illustrates a deferent procedure, which is entitled The Independent Communicative Control Technique. This technique regards the composition of control means in the duplex acoustic enhancement mode that includes an adverse control technique of constituting discrete control settings thereby employing two independent control units, which are control-unit one **121** which is assigned to communicative channel one **101** and control-unit two **122** which is assigned to communicative channel two **102** of said audio enhancing circuit or 3-way crossover network circuit hereof. Consequently, said control unit one independently tuning the enhanced transmission signals of said transmitter as a separate unit, in this manner, enabling diverse settings which may be contrarily out of phase in comparison to the settings of said control unit two, which independently tune the enhanced receiving audio signals in a receiver according to the user's preference or at least one indication of at least one automatic command.

The first control technique, which is The Communicative Equilibrium Control Technique may be use as the basic control technique of the encircled application; thereby, said equivalent control technique enables equivalent control throughout the communication system thereof.

In Fig. 8 A and Fig 8 F, the communicational connections are engaged from the output section of said audio enhancing circuit, such as said 3-way crossover network circuit **47,** to the communication circuits in a transceiver device **77**. From the positive and negative output **26** terminals of said audio enhancing circuit, such as said 3-way crossover network circuit, a connection is made to the input channel of a primary circuit, audio processing circuit or audio amplifier circuit of said transmitter **86**. From the output section of said transmitter, the conductors make connections respectively to the input terminals of a Hybrid Network **104**. From the output section of said Hybrid Network, a connection is made respectively to the **25** input terminals of a Radio Frequency Amplifier **96** of said receiver **85**. From the output section of the Radio Frequency Amp of said receiver, signals respectively emits to the input of a Demodulator circuit **97** of said receiver. From said Demodulator circuit, a connection is made respectively to the input terminals of said communicative channel number two **102,** which is the second channel of said 3-way crossover network circuit or audio enhancing circuit. From the output terminals of said communicative channel number two of said 3-way crossover network circuit or audio enhancing circuit, the generation of three bands of enhanced audio signals is respectively connected to a primary circuit, a secondary circuit, an audio amplifier **98** or audio processor circuit of said receiver for processing or amplifying the improved cycle of audio signals of said receiver, whereby respectively driving at least three various ranged magnetic speakers thereof.

Furthermore, the method of externally coupling audio signals from a communication system is provided under specified terms, as entitled above, ***The Reconcilable Voluntary Dispensable Coupling Method***. In illustrative Fig. 6E, Fig. 6F and Fig. 6G, the dispensable coupling method is provided under the terms in which a dispensable external output audio port, output audio section, or a wireless acoustic system having said output audio section **87** may be adopted to the output section of the receiver for voluntary coupling an external audio cable to an extrinsic reproductive audio system **62** of a motor vehicle or other external audio systems for communicating the received audio signals to a speaker system of said motor vehicle. Therefore, a user is able to subordinately communicate with said signals with respect to the preponderate empowerment of the communication system. Under various conditions, the requirements may forcefully qualify substantial configuration for the retrieval of coherent communication signals from the communication system to the external reproductive audio system. Therefore, the ***reconcilable voluntary dispensable coupling method*** is preconditioned by means of variably arranging the technicalities of the voluntary dispensable method to suit the condition of the audio enhancing circuit or circuits, which consequently enforce subsequent technique to the external dispensable port or external technical connection hereof.

For example, the external coupling technique that is provided herein may employ one, two, three or more bands of enhanced audio signals to the application according to the designative condition or criteria that are primarily generated from the integrated circuit or circuits in said application. In that respect, the external coupling method may vary accordingly in an attempt to meet the designative condition or criteria that is current of the integrated audio enhancing communication system. From this aspect Fig. 6G illustrates an example, via, demonstrating a potential result under the terms when a 3-way crossover network is employed, which generates three bands of audio signals. The three bands of enhanced audio signals may employ at least one **87** or three dispensable audio ports or/and at least one or three acoustical connections or a connection technique which substantially convert two, three or more bands of audio signals into at least one band of audio signals. Therefore, said connection technique may refer to the basic specifications that is relative to the junction of a three to one downward modification technique, which is illustrated in Fig. 6E and is provided in this application thereafter. This down word modification technique, convert a 3-way crossover network to a 1-way crossover network or tunable serial-transmission frequency divider circuit, as stated below, but respectively in consideration of the diverse properties that these two procedures provides, which are distinctive in nature and therefore differentiate in criteria. Though, when the external method employs the junction concept of the three to one or the lineal value-1 downward modification technique, thus, this lineal technique eliminates the employment of excessive conductors or audio cables which is adopted for voluntarily coupling said at least one band of audio signals from the receiver to at least one external coupling medium or audio cable **87** when the at least two or three to one convertible connection technique is applied which provides the configuration of more than one elements to accordingly convert at least two or three conductors by combining the conductors into one distinctive conductor as illustrated in Fig. 6E.

On the other hand, Fig. 6F and Fig. 6G illustrates a potential result when the at least two or three band technique is applied. Consequently, the application may employ two or three dispensable audio ports **87** or/and two or three external coupling mediums or audio cables for voluntarily coupling said at least two or three bands of audio signals from the receiver to at least two or three external coupling mediums or audio cables. Thus, said external coupling mediums or audio cables are respectively coupled to a motor vehicle's audio system or generally other independent audio systems in accordance to the criteria of the application. When the three coupling mediums or audio cables are employed, each cable or medium is assigned to conduct one of the three bands of audio signals to the external independent audio system which may be affiliated with a motor vehicle. For example, the band of high-range signals may be assigned to audio cable or conductor number one **17**, the band of midrange signals may be assigned to audio cable or conductor number two **17** and the low-range band of audio signals may be assigned to audio cable or conductor number three **17.** Thereby, with respect to the integrated acoustical characteristics of the application these various technical properties are voluntarily adopted for distinctively combining and injecting said audio signals to the input of a motor vehicle's reproductive audio system creating an acoustically improved touch free communication system.

From the aspect of the proceeding arrangements of the duplex-mode acoustic enhancement procedure the following diagrams demonstrates alternative aspects hereof

Fig. 8 B shows a schematic rough draft diagram illustrating connections of an entire duplex-mode acoustic enhancement communication procedure which employs an audio equalizer circuit **100** having one control unit that respectively controls transmitting audio signals and receiving audio signal to form a acoustic enhancement communication system.

Fig. 8 C shows a schematic rough draft diagram illustrating connections of an entire alternative duplex-mode acoustic enhancement communication procedure which employs two stereophonic circuits **99** and provides an alternative stereophonic technique using two summing amplifiers and an inverting amplifier to form an acoustic enhancement communication system.

Fig. 8D shows a rough draft diagram illustrating connections of a stationary communication system, such as a stationary house telephone system, a stationary residential communication system or a stationary commercial communication system in which employs a duplex-mode audio enhancement procedure that includes a multi channel audio enhancing circuit, such as an audio equalizer circuit that has at least two communicative channels for implementing the formation of a duplex-mode acoustic enhancement communication system.

A third method of generating enhanced audio signals in a communication system is presented entitled The *Miscellaneous Duplex-Mode Audio Enhancement Communication Method.* Under the specified object of this prospective application, by annualizing the technicalities, one may consider that a microphone preamplifier circuit or other audio preamplifier circuits may be integrated as a primary or secondary audio enhancing circuit hereof. In a provided diagram of these potential technical properties, Fig. 1A briefly illustrates a signal-modification flow chart of audio signals flowing throughout an entire duplex-mode acoustic enhancement communication system that employs at least two audio enhancing circuits herein. The diagram demonstrates the flow of three bands of audio signals and illustrates the modification of the acoustic quality procedure. This acoustic enhancement procedure employs at least two audio enhancing circuits, an audio equalizer circuit having at least one or at least ten bands of audio signals and a 3-way crossover circuit. Up on the consideration of this method, at least one primary communicative channel may be employed for the first communicative channel of at least two audio enhancing circuits, and at least one secondary communicative channel may be employed for the second communicative channel of said at least two audio enhancing circuits in substitute of two individual communicative channels which is a primary channel and a secondary channel that is assigned to each individual audio enhancing circuit hereof and as a result equal to four communicative channels instead of a combination of two communicative channels from both audio enhancing circuits herein.

In Fig. 1A, which roughly illustrates the flow of the duplex acoustic enhancement communication procedure, the flow of audio signals is demonstrated from a microphone. At the initialization of an acoustic impulse at the input section of the microphone **84**, original audio signals flows from the output terminals of said microphone to the input port or input section of communicative channel one **101** of a primary audio enhancing circuit, such as an audio equalizer circuit **100,** in which said communicative channel one thereby channels the acoustic communication procedure of said primary audio enhancing circuit, that is the audio EQ circuit, which then enhances the value of **106** said original audio signals thereof. From the output of said primary audio enhancing circuit, which is said audio equalizer circuit, the enhanced audio signals are respectively injected then flows into communicative channel number one **101** of a second audio enhancing circuit, which is said 3-way crossover network circuit **47**. Said 3-way crossover network circuit, therein, generating at least three bands of enhanced audio signals, a high-range band **74**, a midrange band **75** and a low-range band **76,** that are inherited for precise fluctuations of acoustic fields herein. From the output-section of said second audio enhancing circuit or 3-way crossover network circuit, the three bands of audio signals then is respectively injected into the input of a transmitter **86.** From the output section of said transmitter, the three bands of enhanced audio signals are disposed into the input of a Hybrid Network **104**. From the output-terminals of said Hybrid Network, said three bands of enhanced audio signals are disposed respectively into the input of a Radio Frequency Amplifier **86** of a receiver **85**. From the output section of said Radio Frequency Amplifier, the audio signals are respectively coupled to the input of a Demodulator **97** of said receiver. From the output terminals of said Demodulator in said receiver, said audio signals are respectively coupled then flow to communicative channel two **102** of said primary audio enhancing circuit, which is said audio equalizer circuit. Said audio signals are then connected then flow to communicative channel number two **102** of said second audio enhancing circuit, which is said 3-way crossover network circuit. Therein, the audio enhancing circuits hereof generating another acoustic enhancement procedure thereby respectively converting anonymous or impaired remotely transmitted audio signals **107** that emits from an antenna **107** of a remote transmitter to the adjacent receiver into enhanced perceivable audio signals **105** hereof. Said enhanced audio signals are then respectively injected into the input of a primary circuit, a secondary circuit or an audio amplifier **96** of said receiver thereby said audio amplifier respectively amplifies the plurality of enhanced audio signals and dispose said plurality of enhanced audio signals respectively to display means for displaying the current status of said audio signals. Subsequently, said three bands of enhanced audio signals, herein, drive at least three individually band ranged speakers of the communication system hereof.

A unique lineal acoustic enhancement communication procedure provides an exotic acoustic communication technique, which is entitled, ***The Digital Lineal Value-1 Downward-Modification Technique // Selective-Integrated Acoustic-Enhancement Comm. Technique***, ***which is a (digital/analog conversion technique and apparatus).*** As an alternative arrangement, this lineal modification technique or this application in its entirety may initially employ a microphone preamplifier circuit or the audio preamplifier circuit, which is utilized above in the simplex-mode communication method to input enhanced pre-amplified audio signals into a subsequent audio enhancing circuit as a primary audio enhancing circuit. In this alternative aspect, this communication technique would be opposing the technical preamp arrangements of the one-way audio enhancent method, as stated above thereof. Therefore, the application would practically initiate the procedure with said audio preamplifier circuit as the first audio enhancing circuit. Then the crossover network circuit as the second audio enhancing circuit. Conformably, with respect to controversial reasoning, said preamplifier circuit may be completely extracted from the acoustic enhancement procedure of the linear value-1 downward modification technique to comply with the provided criterions of the designated application herein.

This digital downward modification technique relates to the modification of two, three, four or more bands of audio signals to implement the lineal conveyance of plural band audio signals in one channel to the final audio circuit that retrieve and process the audio signals for increasing the range of space that is used by electronic elements in an electronic circuit. In that manner, the entire acoustic communication procedure is channeled in said one channel throughout the communication system hereof. This method expands the space of the electronic components for compact performance and connection procedures, which conclusively magnifies the perimeters of conductivity, for the containment of physical materials in electronic circuits or audio electronic circuits in a communication system. Thereby, the employment of a one channel connection procedure may be utilized for respectively driving at least one or more magnetic field of an at least one full range speaker or a various range speaker system. Therefore, this technique enables the sufficient perimeters for substantial dimensions in communication procedures and bring forth great support to the electronic conductivities of said communication system under the technical conditions that structures the properties of linearity. Nevertheless, providing that, the audio enhancing circuit's performance is consistent with a broad variation of input signals, in accordance with the perimeters of input-load signals witch is modified thereto. Thus, in that respect, the output signals are proportional to the input signals hereof or visa versa. In this manner, the digital linear method in reverse order thereby arranging the output of the lineal circuit to the input of a subsequent circuit. Via, the input-load to the subsequent circuit will be proportional to the input-load of the digital lineal circuit. Therefore, said lineal circuit may then again add at least one secondary circuit at the output of said subsequent circuit for reinstating the initial band signals or an alternative range of variable signals thereof.

The method includes the configuration of an audio enhancing circuit, such as crossover network circuit to form a predetermined at least one composite-band audio enhancement communication system. This method consists of converting a 2-way crossover network circuit, (two output channels) which produces two bands of audio signals or a 3-way crossover network circuit (three output channels) which produces three bands of audio signals, to a one way (one output channel) audio enhancing circuit, which is a 1.3/3.1-way crossover network circuit or serial-transmission frequency divider circuit that is able to employ one channel that sequentially compact a plurality of band audio signals. The single composite output channel of the 1.3/3.1-way crossover network or tunable serial-transmission frequency divider circuit consisting of at least one IC timer circuit that is capable of providing a serial transmission procedure. In that manner, said two bands of audio signals or said three bands of audio signals are capable of respectively communicating in series order. Therefore, three bands of audio signals that is produced by a frequency divider circuit, such as the 3-way crossover network circuit, has the ability to be distinctively communicated up on initial transmission. Hereby, said three bands of audio signals are virtually capable of driving at least one various-range speaker system. However, providing that, the receiver section of the communication system consist of an integrated retrieval circuit, such as an (digital/analog or analog/digital) circuit at the end audio circuit of the receiver, which is able to retrieve the parent divided bands of audio signals that was produced by the preceding 3-way crossover network circuit and outputs the three parallel band of audio signals to the IC digital timer circuit then to said receiver section, that includes the integrated retrieval circuit of digital/analog conversion. Thereby, with the provided digital/analog conversion circuit, or (digital 1-way crossover network circuit), of the receiver, the receiver is capable of retrieving and receiving the three bands of audio signals, thereby drives a various-range speaker system of the receiver or full range speaker which consists of a high range inner cone for high frequency signals and a main cone for mid range frequency signals and low range frequency signals. Therefore, on retrieval, each range of audio frequency signals is reinstated back to analog by the employment of the digital to analog or analog/digital conversion method and apparatus, which may be the digital one-way crossover network circuit.

The connection procedure of converting at least two or three bands of audio signals to at least one band or channel of said at least two or three bands of audio signals for conducting said at least one band or channel of audio signals to a communication apparatus is provided. Fig. 3H to Fig. 3J illustrates novel connection terminals and connection procedure. In this diagram, a three-way crossover network circuit is converted into a digital 1.3/3.1-way audio enhancing circuit to form an acoustic enhancement circuit, such as a variable digital one-way crossover network circuit or variable digital/analog frequency divider circuit for acoustical-enhancement connections to a communication system. Fig. 3H roughly highlights the illustrated connection terminals where novel connections are being made to constitute a digital one-way crossover network or digital/analog frequency divider circuit.

Furthermore, Fig. 4H illustrates control means and the connection of the control means or control circuits. The provided control means in the previous audio enhancing circuits are respectively adopted to this composite acoustic procedure for controlling audio communication signals herein. Control means are provided in said audio enhancing circuit, such as said digital one-way crossover network circuit or digital/analog frequency divider circuit which accurately bring forth emphasis on the compact audio signals and respectively broadcast the signals at special designated values to a user. At least one of each control elements is applied to this application as follows: a variable input gain dB control circuit control circuit **90** connected to the main input of said digital one-way crossover network circuit or digital/analog frequency divider circuit for varying the input gain or of the one-way crossover network circuit or digital/analog frequency divider circuit, a variable millisecond delay control circuit **54** connected to the one-way crossover network circuit or digital/analog frequency divider circuit thereby varying the time of the circuit hereof, a high frequency dB gain control circuit connected to the output of the high-range filter circuit of said one-way crossover network circuit or digital/analog frequency divider circuit, a variable frequency range control circuit **94** connected to the output section of a first order high band-pass filter circuit **34** in said one-way crossover network circuit or digital/analog frequency divider circuit for varying high-range frequencies of the high band-pass filter circuit, a variable gain control circuit **92** connected to the output of a two order band-pass filter circuit **36** of said one-way crossover network circuit or digital/analog frequency divider circuit for tuning the gain of the band-pass filter circuit, a third variable frequency range control circuit **94** connected to the output section of said two order band-pass filter circuit of said one-way crossover network circuit or composite acoustic filter circuit for varying the band-pass frequencies of the band-pass filter circuit, a variable low frequency dB gain control circuit **93** connected to the output of the low-range frequency filter circuit **35** of the same one-way crossover network device, a third variable frequency range control circuit **94** connected to the output section of the first order low band-pass filter circuit of said one-way crossover network circuit or digital/analog frequency divider circuit for varying the low range frequencies of the low band-pass filter circuit, and a threshold dB control circuit **95** connected to the crossover network circuit. A variable master-gain control circuit **123** is capable of being respectively connected at the output of the audio enhancing circuits hereof.

Thereby, a variable crossover network circuit is then formed for enabling the variation of the following 1.3/3.1-way crossover network or digital/analog frequency divider circuit, which is an audio enhancing circuit designed for virtually communicating two or more bands of audio signals that derive from the same acoustic source over to at least one medium and to said communication system hereof. Fig. 3H and Fig. 3I roughly demonstrates connections that constitutes a 1.3/3.1-way crossover network or digital/analog frequency divider circuit, which includes a procedure of comprising said variable crossover network with a digital audio IC timer circuit, in which thereby assign a time slot to each band of audio signals from the 3-way crossover network circuit. In this manner, one channel transmits a band of audio signals of said crossover network circuit then holt. Then the same step is repeated from another time slot etc. In the two illustrative diagram Fig. 3H and Fig. 3I, a 3-way crossover network circuit **47** is provided to apply the procedures of the digital lineal Downward Modification Technique. From the output section of a one element high band-pass filter circuit **34** of said 3-way crossover network circuit, a contact is made respectively to a first input time slot section of the IC timer circuit, which thereby has the capability of timing high-range audio signals that output from the high band-pass filter circuit. From the output section of a band-pass filter circuit, of said 3-way crossover network circuit, a connection is made respectively to a second input time slot section of said IC timer circuit, which thereby has the ability of timing a pass-band range of audio signals from said band-pass filter circuit herein. From the output section **26** of a low band-pass filter circuit **35** of said 3-way crossover network circuit, a third connection is made respectively to a third input time slot section of said IC timer circuit. Thereby, said IC timer circuit has the ability of timing a band of low-range audio signals from said low band-pass filter circuit. In this manner, said IC timer is able to assign a sequential time interval for each band of audio frequency signals that emits from said 3-way crossover network circuit hereof.

Thereby, said one-way crossover network circuit or composite acoustic filter circuit is then formed. As illustrated in Fig. 3I and Fig 3J, said IC timer of said variable one-way crossover network circuit or variable digital/analog frequency divider circuit, then has the ability to make a virtual one channel connection to the input section of an audio preamplifier circuit, **28** in which is capable of pre-amplifying the band of composite audio signals from the preceding acoustic circuit, such as the two-way or three-way crossover network circuit. Thereby, said audio preamplifier circuit subsequently connects the serial channel of audio signals to the input of a communication system **41** for communicating the composite channel of enhanced audio signals therein. Said variable digital/analog frequency divider circuit is able to vary or control at least one channel of audio signals in which said audio signals virtually consist of the characteristics of its parent state of audio signals. However, given that, said audio signals retain the distinctive characters that is able to separately drive at least one two or three predetermine magnetic field and said audio signals are band within the channel that communicate them providing that retrieval means is interconnected at the last audio circuit of the audio enhancement system.

Furthermore, the illustrative Fig. 8H and Fig. 8I features a brief diagram of the *selective integrated acoustic enhancement technique,* which is provided with the incorporation of this downward modification procedure. From that aspect, Fig 8I highlights novel connection terminals and Fig 8H show connection points. To continue connections to form the integrated audio enhancing circuit, a switch network **78** that is comprised with control means which includes at least one master gain control circuit **123** is provided in said audio preamplifier circuit. From the alternative of said switch network, a connection is made respectively to the output section of a high-pass filter circuit, a band-pass filter circuit and a low band-pass filter circuit of a 3-way crossover network circuit. Sequentially, said 3-way crossover network circuit is respectively connected to the output section of an audio equalizer circuit which then forms the 1.3/3.1-way/3-way crossover network/ audio preamp/ audio equalizer device. The selective integrated audio enhancing circuit is then connected to a communication system, **41.** The communication system is capable of communicating at least one multi-band or at least one integrated-channel of audio signals or enhanced audio signals of said 1-way crossover network circuit when the 1-way crossover network circuit is select. However, said three bands of audio signals of said 3-way crossover network circuit is capable being communicated when the 3-way crossover network and said audio equalizer circuits are selected hereof. At the selection of said 1-way crossover network circuit, said audio signals are able to individually drive two or three different range of separate speaker similar to the 2/3 way crossover network circuits.

When the method of applying at least one audio enhancing circuit, such as said variable one-way crossover network circuit or variable digital/analog frequency divider circuit to a communication system is provided. The one-way crossover network circuit or variable digital frequency divider circuit generates one multi-band or a single-multi channel (more than one band in a channel) of enhanced audio signals and respectively connects the single channel of said audio signals to said communication system. The conventional technique that is used to produce a side tone in a communication system is employed in this application, as stated. The method includes the same concept of communicating enhanced audio signals either one-way (simplex mode) or two-way (duplex mode), as stated herein, which is the verbal simplex/duplex mode. Generally, the mode of communicating said enhanced audio signals in verbal simplex/duplex mode may be perceived as a preferred embodiment or an imperative mode of the encompassed application, due to the advance simplex or duplex communicational advantages that is provided of this mode. Consequently, the employment of two communicative channels of said audio enhancing circuit, such as said variable one-way crossover network circuit or variable composites acoustic filter circuit is essential for channeling the composite communicational acoustic-enhancements procedure of the communication system herein. Communicative channel number one of said audio enhancing circuit is capable of channeling the enhancement procedure of transmittable audio signals and communicative channel number two of said audio enhancing circuit is capable of channeling the enhancement procedure of receivable audio signals, which may be emitting from a remote transmitter or transceiver device. The tunable one-way crossover network or tunable composite acoustic filter may employ the equilibrium control technique to the control system herein. Under the selective conditions, an individual control unit is able to equivalently control two communicative channels of audio signals with the result of equivalent acoustic values therein. On the other hand, the alternative independent control technique may apply herein, and two independent control units may be adopted for independently controlling each individual communicative channels of audio signals thus controlling the transmitter's audio signals independently with respect to its distinctive consignment to an independent communicative channel and controlling the receiver's audio signals independently with respect to its distinctive consignment to another independent communicative channel thereof.

Fig. 8E shows a schematic rough draft diagram illustrating connections of an entire duplex-mode audio enhancement communication procedure which employs a variable one-way crossover network circuit or variable serial-transmission frequency divider circuit as an audio enhancing circuit, in which provides one control unit that respectively controls transmitting audio signals and receiving audio signals. In illustrative expression Fig. 8E, exclusive connections to the communication system is constituted in a transceiver device **77** from the IC timer circuit **54** of said audio enhancing circuit, such as the variable one-way crossover network circuit or variable serial-transmission frequency divider circuit **103** to the transmitter circuit then to the receiver circuit, which is located in the transceiver device. From an acoustic source, such as a microphone, **84** original audio signals from the output section of said microphone are connected to an input port or an input section of said communicative channel one **101** of said audio enhancing circuit, which is said variable one-way crossover network or variable serial-transmission frequency divider circuit. In this manner, said communicative channel one of said audio enhancing circuit is able to channel the first communication enhancement procedure. From the output terminals of said communicative channel one of said audio enhancing circuit, such as said one-way crossover network circuit or variable serial-transmission frequency divider circuit and said IC timer circuit, a one band or single channel connection is made respectively to the input terminals of an audio amplifier, audio processor or the primary circuit of said transmitter **86**. From the output section of said transmitter, said one band or single channel connection is made respectively to the input of a Hybrid Network **104**. From the output of said Hybrid Network, said single channel or one band-connection is made to the input of a Radio Frequency Amplifier **96** of a receiver **85**. From the output section of the Radio Frequency Amp, signals are respectively connected to the input of a Demodulator **97** of said receiver. From the output of said Demodulator, said one band or single channel connection is made to the input of communicative channel two **102** of said audio enhancing circuit, such as said variable one-way crossover network circuit or variable serial-transmission frequency divider circuit and IC timer circuit for channeling the second enhancement procedure of audio signals herein.

From the output terminals of said communicative channel two of said audio enhancing circuit, which is said variable one-way crossover network circuit or serial-transmission frequency divider circuit and said IC circuit, another one-band single channel connection is made to the input of primary circuit, secondary circuit or an audio amplifier **98** of a receiver therein outputting one band or a single channel of enhanced amplified audio signals thereby driving a speaker system. The variable one output channel crossover network or variable serial-transmission frequency divider circuit is adopted as an audio enhancing circuit for enhancing communication signals respectively to at least one band or at least one single channel of an associating component; whereby, said one-band or single channel of enhanced audio signals is capable of driving at least one speaker system. The flow and modification of audio communication signals are demonstrated in the diagram of Fig. 9A which briefly illustrates a complete duplex-mode acoustic enhancement communication system that expresses the flow and enhancement modification procedure of an audio enhancing circuit, such as the tunable one-way crossover network circuit or tunable serial-transmission frequency divider circuit, in which produces at least one band of composite audio signals from an acoustic source, such as a microphone then to said transmitter then to a remote receiver **109.** The transmitted audio signals from the audio enhancing circuit are received in the remote receiver as magnificently refined perceivable audio signals. An the other hand, anonymous or impaired quality audio signals from a remote transmitter **108** are remotely transmitted to said communicative channel two of said audio enhancing circuit which therein channels the enhancement procedure, in which enhances the anonymous or poor quality audio signals of the remote transmitter to refine value because of the subsequent interconnection with the adjacent receiver of said transceiver device. Therefore, said anonymous impaired or poor quality audio signals **105** are thereby received as a plurality of enhanced-band audio signals **106** of said adjacent receiver. Nevertheless, said receiver section consist of an integrated retrieval circuit, such as (digital/analog or analog/digital) circuit at the end audio circuit of said receiver. By that manner, the end circuit of the receiver is able to retrieve the parent divided bands of audio signals which was produced by the preceding 3-way crossover network circuit. Moreover, the preceding 3-way crossover network circuit is arranged to produce and output the divided bands of audio signals to the IC timer circuit then to said receiver section which, includes the integrated retrieval circuit that drives at least one a various range speaker system of the receiver. Furthermore, this communication technique may employ a dispensable audio port adopted for voluntarily coupling said communication system to independent reproductive audio system or a motor vehicle's reproductive audio system hence reproducing the single channel of audio signals and enabling subsidiary authorization of said audio signals from said communication system to a user.

Fig. 8D illustrates a rough draft diagram of a stationary communication system, such as a house or stationary-commercial communication system, which employs an entire duplex-mode acoustical enhancement communication connection procedure which includes an audio enhancing circuit, such as an audio equalizer circuit **100** that has the first communicative channel **101** and the second communicative channel **102** that consist of one control unit **121** which thereby respectively controls transmitting audio signals and receiving audio signals.

Generalized aspects of alternative terms regarding the specifications of the provided application are presented and therein recites in terms that: a verbal-simplex or a duplex communication system which comprises at least one audio enhancing circuit, such as a crossover network circuit that is used as a sample in the previous section of the specification, may be alternated for an alternative mode of use. Therefore, audio enhancing circuits, such as an audio preamplifier circuit an audio equalizer circuit, crossover network circuit, a stereo phonic, mono phonic, stereo/mono application or other audio enhancing circuits may be employed in substitute of the crossover network circuit, or said at least one audio enhancing circuit may be integrated with other audio enhancing circuit, such as an audio preamplifier circuit, audio possessing circuit, audio mixer circuit, audio filter circuit, audio compressor circuit, audio amplifier circuit, an acoustic noise reduction circuit, crossover network circuit or other audio enhancing circuit and cooperate to accommodate more comprehensive features of the audio enhancement communication system hereof. Each of the above compatible audio enhancing circuits is capable of individually interacting with the communication apparatus when engaged as an individual unit. For example, the stereophonic sound application or said audio equalizer circuit may be employed as a single audio enhancing circuit. Therefore, the audio enhancing circuit operates as a solo audio enhancing circuit that is individually connected to said communication apparatus whereby said solo audio enhancing circuit is capable of producing enhanced audio signals respectively to said communication apparatus as an individual entity herein. On the other hand, when said audio enhancing circuit is employed as a multi-integrated system which may miscellaneously incorporate various components, such as at least one audio preamplifier, and/or at least one audio equalizer circuit, the plurality of internal integrated circuits cooperates accordingly by corresponding to interactive signals of the various enclosed interconnecting audio enhancing circuits herein. The application of mono/stereo sound may individually be apply to any specified audio enhancing circuit stated above depending on the aspirations of the application of this nature. A desired interconnection configuration can be applied in various orders depending on the impending or predetermine concept or method of application thereof. For example, an audio mixer circuit may be employed as the primary audio signal enhancing circuit then subsequently other audio signal enhancing circuits may follow in subsequent manner, such as an audio preamplifier circuit or audio equalizer circuit etc.

For the conveyance of such high quality signals in a communication system, multiplex means are capable of being employed for channeling these quality signals over a verbal or audio communication spectrum herein. The multiplex technique provides a procedure of analog (FDM) or digital (TDM) multiplexing.

The internal integrated circuitry system mentioned above is autonomous to the dispensable external coupling means which is preconditioned to voluntarily couple with a motor vehicle's extraneous reproductive system, and said internal audio enhancing circuit can be voluntarily disengaged from said external coupling means so that said internal audio enhancing circuit may be engaged with a communication apparatus that is isolated from a motor vehicle's audio system or other independent audio reproductive system. Other independent audio reproductive system is capable of being connected to said external coupling means, such as professional reproductive audio system that may employ the audio signals from said audio enhancing circuit, which is connected to said communication device and use said audio signals for professional recording or other recording purposes. Under these conditions of mobility, a separate communication apparatus with a distinctive nature, such as a stationary wired extended Telephone, other stationary communication devices, a stationary residential, commercial or systematic computer unit under the consideration that the exclusion of these devices are eminent, which may therefore apparently suggest that these stationary communication devices agenda the extraction of the dispensable external coupling method and merely permit the exclusive audio enhancing communicational application hereof. Under these conditions, the exclusive external mobile coupling techniques which consequently conjoin the communication system to the motor vehicle's external audio system would be extract from the application of this contrary aspect herein. The exclusive acoustic enhancement application, which is designed for enhancing audio signals in a communication apparatus, may completely extract said first dispensable audio port and said connecting means thereby eliminating the conjunction of said communication apparatus and the audio reproductive system of said motor vehicle hereof.

Accordingly, mathematical formulas accompanying other integrated elements may be included to the entire comprehensive audio enhancing application for the purpose of defining indefinite signals and to evaluate predetermine values thereby constituting a more efficient circuit. The application of integrated mathematical equations may be submitted to express the variable performance characteristics of the entire audio enhancing circuits to evaluate the audio signals to find the quality factor of a given application and to determine value of the applications herein. Under the provided terms, a mathematical expression is applied for predetermining component values of said crossover network circuit or (audio enhancing circuit) for a desired response as follows: $C_1=1/(2\ f_2R_t)$, $L_1=R_m/(2\ f_2)$, $C_2=1/(2\ f_1R_m)$, and $L_2=R_w/2\ f_1$, where f_1 and f_2 represent 3 dB.

A generalize aspect which interprets the prospects of alternative-designs that this application may employ is presented: Specifications of an audio enhancing application which is tailored for the employment of communication systems may include sophisticated methods of balancing these audio enhancing circuits by applying impedance compensation circuits, attenuation circuits, or series notch filters for a flattering overall response and the technical audio enhancing circuit, and crossover network circuit design that is presented to the above application may be an active crossover network design. Filter circuits of said audio enhancing circuit may be based on various designs, such as a Butterworth filter design, Chebychev filter design or Bessel designed filter circuit. In the audio enhancing circuits at least two specified ranged frequency signals may be adopted for enhancing a predetermined value for driving a relative corresponding magnetic field. For example, the high range of audio frequency signals is able to employ two bands of high range audio frequency signals, a band of high range frequency signals which bring emphasis to the high range audio tone or pitch and an adjacent band of high-midrange audio frequency signals whereby stressing the high-mid range audio tone or pitch, a midrange band of audio signals, a low-range of audio signals and an adjacent band of low-mid range audio frequency signals whereby stressing the designated low-midrange audio tone or pitch thereby emphasizing or/and banding signals to a specified magnetic field hereof. For filtering noise generating from a power source or any location within the system, a noise suppression circuit may be adopted herein to suppress the noise by means of grounding the circuit witch would naturally resolve the matter.

A simple/*duplex-stereophonic procedure* of applying a stereo phonic sound to the audio section of duplex communication apparatuses, such as Telephones, Two-way radios, C.B radios, Amateur radios, modem apparatuses or a verbal simplex communication devices is included in the following procedures: providing at least one audio reproductive element whereby reproducing a first channel of audio signals, which is the right acoustic channel of out putting audio signals, employing at least one second channel of said reproductive element whereby reproducing a second channel of audio signals, which is the left channel of outputting audio signals. Said at least one audio reproductive element is respectively connected to at least two channels of said communication apparatus. Dual or single communicative channel connection procedure is applied to a transmitter or/and a receiver depending on the designation of the directional flow of enhance audio signals that the provided communicative application is design for. For instance, an application may incorporate a simplex acoustic enhancement (one-way) communication mode where said enhanced audio signals may only communicate in one direction, which employ one communicative channel, or the opposing mode may apply to the acoustical enhancement system in which enabling said enhance audio signals to be communicated in duplex (two-way) communication mode thereby employing two communicative channels thereby channeling transmission and reception of said enhanced audio signals in a duplex/simplex mode.

Fig. 8 C illustrates two possible techniques of the stereophonic connection procedure. Therefore, one potential technique, which illustrates the employment of stereophonic circuits **99** as audio enhancing circuits of the communication system employing transformers as the acoustical reproductive element is provided. According to this technique, A and B signals are fed into the primaries and M is derived by coupling two secondaries in series and in phase, and S is derived by coupling two secondaries in series and out of phase. In the Fig. 8 C illustration, another technique which employs stereo phonic circuits **99** that are adopted as audio enhancing circuits for coherently enhancing the acoustic section of said communication system is provided which utilizes summing amplifiers whereby A and B are summed in-phase to derive M, and summed with a phase inversion in the B leg to derive S. Both matrixes have the advantage that they will also modify back to the original stage from M and S, in that M and S may be connected to the input and they will be modified back to A and B. The stereo phonic signals are then respectively retained in a comprehensive audio enhancing section comprising said communication apparatus for respectively communicating said stereo phonic signals to a remote communication device using various multiplexing techniques including mathematical equations thereby communicating said stereo phonic signals in which are able apply to communication apparatus, such a Telephone, Two-way radio, Amateur radio, C.B radio or other communication apparatuses excluding the conventional radio or visual broadcasting system. In the application of stereophonic communication, at least one microphone input port or input section is able to be employed by said communication apparatus instead of a dual microphone input port or input section. The application of stereophonic enhancement may incorporate mono/stereo, stereo, or mono system whereby cooperatively performing in submission to said communication apparatus.

In Fig. 9B and Fig. 9C an exotic *Ultra-Intelligible Multiplexing* technique is presented herein for simultaneous communicating various ranges of vocal or acoustic signals that derive from the same acoustic source, or at least one audio enhancing circuit, over a communication spectrum. Eminently, the human voice has frequency components of an approximate range from 20Hz to 20KHz. However, for practical reasons, common verbal-simplex or duplex communication system, such as telephone system has a narrow bandwidth of an approximate rang from only 300Hz to 340 KHz. Because of these critical limitations, the intelligible multiplex technique is provided to the entire encircled application for conveying high quality acoustic signals, which may exceedingly range out of the specified limit of a specific communication spectrum, such as the spectrum of the convention telephone system. The multiplexing technique is presented for the magnificent conveyance of frequency components of at least one audio enhancing circuit that may be designed for the reproduction of audio signals that derive from acoustic source of interest, such as vocal source that may produce voice signals of an approximate range from 20Hz to 20KHz for simultaneous communication of more than one vocal or acoustic signals over a communication spectrum. From that point, the present intelligible multiplexing technique is capable of conveying the entire approximate range, which may be from 20Hz to 20KHz depending on the acoustical-enhancement communication application. In that context, analog (FDM) or digital (TDM) multiplexing technique may be employed to suit this high quality application, which may communicate verbal or acoustic signals with the content of at least one emphasized audio tone thereby predetermining audio quality hereof. The technique consists of a procedure of frequency division multiplexing.

Using a block diagram, FIG. 9b and Fig. 9C, demonstrates the multiplex communication procedure: Fig. 9B illustrates the procedure of the FDM multiplexing technique from the transmitting end of the FDM system. Two audio circuits are provided for the acoustic enhancement multiplex procedure. From this technical aspect, the first audio circuit is an audio enhancing circuit, such as a microphone preamplifier circuit or audio preamplifier circuit. The second audio circuit that this application provides is an audio enhancing circuit, such as an audio equalizer circuit **100** or an equalizer circuit that is specifically designed for processing vocal signals. In this aspect, the audio equalizer circuit employs multiple approximate ranges of audio frequency signals which emits from the output of the equalizer circuit. The approximate ranges of audio signals are injected respectively into a channel modulator. In this paradigm, frequencies in the approximate range of 30 Hz to 125 Hz, which are on the Extremely Low Frequency (ELF) channel of the communication spectrum are employed and they are adopted for emphasizing the bass in the voice tones of a user, frequencies in a range of an approximate 125 Hz to 300 Hz are employed, which is on the Voice Frequency (ELF) channel of the communication spectrum and are within the range of the vocal fundamental tones thereby bring emphasis to the fundamental frequencies in this specified region, frequencies in a range of an approximate 315 Hz to 620 Hz are employed, which are on the Voice Frequency (VF) channel of the communication spectrum and they are important for voice quality content, frequencies in an approximate range of 630 Hz to 1k are employed, which are on the Voice Frequency (VF) channel of the communication spectrum and this approximate range is a significant range for voice naturalness, an approximate range of audio signals from 1.25 kHz, which is also of the VF spectrum to 4 kHz which is on the Very Low Frequency (VLF) channel of the communication spectrum, and this approximate range of audio signals is significant because of its fricative vocal accentuation range, which is important for speech intelligibility. An ultimate range of approximately 5 kHz to 8 kHz and from 8 kHz to 16 or 20 kHz, that are also of the (VLF) communication spectrum, may be employed under technical moderation for ultra accentuation and enables manipulative clarity of the voice signals. In the illustrated Fig. 9B, which illustrates the procedure of the FDM multiplexing technique from the transmitter end, **86** the carrier of each modulation is on a deferent frequency with sufficient room over a specified frequency range. Each band of input signals is an integral of the overall bandwidth, as illustrated at the top of the illustrative Figure of the receiving end. From the modulator circuit, illustrated in Fig 9B, the modulator's output signals that consist of intelligible signals are injected then algebraically added together in a linear mixer, thereby implementing a composite of all the carriers with the content of their modulation. From the output of the linear mixer, the modulation composite signals are then injected into a transmitter. From that aspect, two exotic acoustic enhancement communication techniques are provided, the exotic *ultra-intelligible Multiplexing technique*, which is able to convey various ranges of quality audio signals from the audio enhancing circuit or circuits and the second exotic technique and apparatus, which includes the 1-way crossover network or serial transmission frequency divider circuit, in which provides the one channel serial transmission of the divided audio signals strait to the audio reproductive device of the communication system hereof.

Fig. 9C illustrates the procedure of the FDM multiplexing technique from the receiver end of the system in which employs a 1-way crossover network or acoustic composite filter circuit for maintaining a one channel connection procedure that channels the communication audio signals to a user: As illustrated from the receiving end, a receiver **85** picks up the signals that was transmitted by the transmitter then demodulates it back into the composite signals. The composite signals are injected into a plurality of band-pass filter circuits (BPF). The filter circuits are centered on one of the carrier frequencies and they reject unwanted channels and only pass the assigned channel. The signals are then injected into a channel demodulator where they are retrieved to there original state. The deferent range of specified output signals from each channel demodulator are then injected into the input of an audio mixer where they are finally summed or combined then injected into a 1-way crossover network or variable acoustic composite filter circuit, **103** which consist of a frequency divider circuit or 3-way crossover network circuit and an acoustic IC timer circuit. In this manner, said frequency divider circuit or 3-way crossover network circuit is able to divide the combined audio signals into three bands of audio signals. Then, dispose the three bands of audio signals into the acoustic IC timer circuit. Thereby, said acoustic IC timer circuit sequentially times said three bands of audio signals. Then, dispose the sequential bands of audio signals into an audio amplifier **98** with 3 output channels. The amplifier amplifies then retrieve the audio signals and convert them to the original form, from (digital/analog), and the three bands of audio signals output at the three output channels of said amplifier, which thereby sends said three band of audio signals to a speaker or speaker system of said receiver therein driving the speaker system virtually in the same manner of the preceding 3-way crossover circuit hereof.

A generalized aspect of the specification of the acoustic enhancement communicational application is expressed as follow: the preferred embodiment herein, which employs a simplex/duplex mode of acoustic communicational enhancement, thereby providing a vocal-simplex communication system or a duplex communication system, such as a telephone, C.B radio, Two-way radio, Amateur radio, modem apparatus or other communication system comprising at least one audio enhancing circuit, which is capable of enhancing acoustic signals and includes at least one communicative channel which channels the one-way acoustic enhancement communication procedure thereby channeling said acoustic enhancement communication procedure of said simplex or duplex communication system hereof. An the other hand, for implementing the duplex acoustic communicational enhancement mode, said duplex communication system is capable of employing at least two communicative channels of said at least one audio enhancing circuit, in which thereby produces enhanced acoustic signals. Thereby, said at least two communicative channels are capable of channeling said acoustic enhancement procedure two-ways hereof. The first communicative channel selected from the group of said at least two communicative channels of said at least one audio enhancing circuit is communicative channel one, which is employed for channeling the firsts acoustic enhancement communication procedure of originals audio signals thereby injecting the enhanced audio signals from said first communicative channel of said at least one audio enhancing circuit, that provides said enhanced audio signals to a transmitter, for respectively transmitting said enhanced audio signals into an adjacent receiver section, which employs said enhanced audio signals for the presents of enhanced side tone audio signals herein. Anonymous, poor or impaired audio communication signals from remote communication device are disposed into a second adjacent receiver section which is interconnected with communicative channel two of said at least one audio enhancing circuit, which thereby channels the second acoustic enhancement communication procedure and consequently enhances said anonymous, poor or impaired audio communication signals from said remote communication device herein.

Said at least one audio enhancing circuit further includes control means, which consist of at least one control unit having control circuits employing said at least two communicative channels. The first communicative channel and the second communicative channel which are controlled by said at least one control unit, in which enables equivalent control, are respectively connected to said first communicative channel and said second communicative channel herein. On the other hand, said at least one audio enhancing circuit may employ two independent control units. As a result, control unit one separately controlling said communicative channel one as an independent unit and control unit two separately controlling said communicative channel two as a second independent control unit thereby enabling distinctive control thereof. In the communication system, the control means may be excluded, which may be integral control elements, such as variable control circuit that consist of components capable of conveniently varying acoustic values of said at least one audio enhancing circuit. In this manner, components, such as variable capacitor, variable resistors, variable inductors, et cetera would be excluded thereof. Therefore, the application would integrate said control elements with fix components or said at least one audio enhancing circuit would have been employed for internally enhancing said communication system at fixed values or rate in substitute of the variable components thereby employing fixed components herein, such as fixed capacitor, fixed resistors, fixed inductor, etc. Therefore, said at least one audio enhancing circuit would be fixed at predetermine perimeter that is determined by the specification of the acoustic enhancement application hereof. In this manner, the application retains the exclusive acoustical-enhancement communication system herein.

Said at least one audio enhancing circuit may consist of accurate or inaccurate acoustic reproductive means which is able to accurately or inaccurately reproduce acoustic signals. Alternatively, this application may also employ accurate audio productive means herein, thereby accurately mimicking acoustic signals that may include specially design audio circuits, like special modulator and oscillator circuits that are able to generate complex waveforms that contain substantial or all overtones, decay and rise time information, thereby accurately enhancing given value of audio signals respectively emitting from at least one acoustic sours, transducer or microphone output section in said communication system herein. Despite of the inaccurate result that may apply when an application employ an inadequate approach, said at least one audio enhancing circuit is capable of substantially sustaining the perimeter of acoustic enhancement because of the compensated complementary acoustic component herein, which hereby creates accessible auxiliary integration. However, providing that the acoustic quality value of said audio enhancing circuit is at least at the acoustic quality value of the preceding conventional communication system hereof.

The microphone's input port or the input connection sector of the audio enhancing circuit may be at least one or two channel input ports or at least one or two channel input connections for retaining at least two separate channels of audio signals emitting from an acoustic source, such as a stereo phonic environment, whereby the stereo phonic component emphasizing audio details more explicitly and compensates for dull audio signals herein.

Furthermore, a dispensable output port may be employed for coupling said dispensable output port to connection means therein. Said connection means is adopted for voluntarily connecting to the external reproductive audio system in a motor vehicle. Controversially, said dispensable receiving audio port may be completely omitted from this application thereby maintaining said audio enhancing circuit as a solo audio enhancing circuit which is then comprised with said communication system as a solo audio enhancing circuit hereto.

Said audio enhancing circuit, as mentioned above, is generally defined as at least one audio circuit that is designed for a field of at least one acoustic source, such as an audio circuit that is designed at least in part for reproducing audio tone that emits from a vocal acoustic source, a tone generator or an audio reproductive device, such as an audio playback device. Furthermore, said at least one audio enhancing circuit is at least one section of said audio enhancing circuit, which is able to include specified values that is adopted for enhancing audio signals that may derive from an original acoustic matrix or a reproductive matrix of the acoustic environment. Said audio enhancing circuit, which is employed for the advancement of plain, poor or impaired audio signals, such as "Telephone Quality audio signals", may be at least one audio equalizer circuit, at least one crossover network circuit, at least one filter circuit, at least one audio processing circuit, at least one audio signal compression circuit, at least one audio noise reduction circuit, at least one audio mixer circuit, at least one audio preamplifier circuit, amplifier circuit or integrated audio enhancing circuit, a mono/stereo application or other audio enhancement circuits which is capable of employment for improving audio signals in the communication system. Each circuit may be enclosed using a miscellaneous technique where more than one-combined circuits are compact in a component. For instance, said integrated amplifier circuit may internally consist of at least one mixer circuit, at least one crossover network, audio processor circuit, and/or other audio signal improvement circuits.

Said noise reduction circuit is a terminator device that rejects unwanted noise, which may be applied from various aspects depending on the communicative application. For instance, the noise reduction system, as stated about thereof, may be a noise elimination type, which breaks the audio spectrum into a number of frequency bands. In that respect, whenever the program's signal level is at a specified perimeter or a user-defined threshold level, the audio signals are attenuated herein. The dynamic filter circuit analyzes the incoming audio signals for frequency content, and in the absence of a specified frequency, the bandwidth of the filter circuit is reduced. When the specified frequency is reinstated, the filter circuit reopens adequate passage to surpass the complete audio signal. The audio equalizer circuit, as recited, is an audio equalizing circuit employed for controlling relative amplitude of various frequencies within an audible bandwidth. Said equalizer circuit or other audio signal enhancing circuits may be applied to a single audio channel, a number of audio channels or the complete system in its entirety for various reason, which may be relative to the emphasis of enhance acoustic development.

Said at least one audio enhancing circuit or audio equalizer circuit is capable of including one or more bands of audio frequency signals, control circuits, or value that accommodate variable ranges of specific value specified for a field of emphasis thereof. Therefore, in said audio enhancing circuits, a given value of decibels at a specified range of frequency may derive from various consignments according to the conditions that tailor the acoustical enhancement communication application. For instance, the equalizing filtering response may be set for a 6-dB boost at 100 Hz or 4-dB boost at 5 kHz. Furthermore, respectively based on the acoustic instrumental spectrum, the frequency tone of interest may vary in accordance to the field of instrument or acoustic source that is specified by the designated acoustical-enhancement communication application hereof. Therefore, the instrumental application may specify in a wide range of instruments or at least bring emphasis to the vocal spectrum of an audio enhancing circuit, such as an audio equalizer circuit for emphasizing the ultimate specialized voice quality content of the acoustic communication system.

For instance, the equalizer circuit may consist of center frequency of 1/3 octave with low bands of vocal acoustic signals from the approximate range of 30 to 125 Hz, low to low-mid frequencies in the approximate range of 125 Hz to 300 Hz assigned to dB variable values for emphasizing the voice signals at a range, which is fundamental to voice tones in the audio spectrum, low-mid range of audio frequency may employ frequencies in the range of an approximate 315 Hz to 620 Hz of audio frequency signals assigned to variable dB value for varying the voice signals at a specified range, which is very important for voice quality in the audio spectrum, an approximate range of low-mid to high-mid audio signals may employ frequencies in the approximate range of 630 Hz to 1k, which is a significant range for voice naturalness, but under the consideration of moderate technicalities or adjustment for good performance, an approximate range of high band frequencies may employ an approximate range of audio signals from 1.25 kHz to 4 kHz, which is a fricative vocal accentuation range that is important for speech intelligibility. These audio signals may be moderated specifically for the field of operation because of the capabilities of lavish tuning. In that respect, too much boost between 2 and 4 kHz may mask certain speech sounds, like M, B and V , which may become indistinguishable under these extreme conditions. For the ultimate high range of audio frequency signals, an ultra range of approximately 5 kHz to 8 kHz or 8 kHz to 16 or 20 kHz, within the order of technical moderation, may be employed for ultra accentuation with the adaptation of signals from the approximate range of 1.25 to 8 kHz, which may be used to govern the clarity of voice signals of the application hereof. In considering stationary and radio communication systems, which operates on specific range of frequencies that may be inadequate quality for transmission, substantial arrangements may be provided to channel these specific perimeters of the communication procedure. Because of the limited audio signals range of the communication spectrum, the encircled audio enhancement communication system may further include frequency division techniques (FDM) to convey the approximate 20 Hz to 20 KHz range of acoustic signals to a corresponding communication device. In this manner, said acoustic signals retain their refine content magnificently.

Said audio preamplifier circuit, as recited in the previous section of this generalize aspect, is a microphone preamplifier or other audio preamplifier: wherein, a low level microphone signal can be boosted to a higher line level providing variable gain monitoring over a line level input audio signal and a degree of distinctive signaling from an external input interference or improper grounding or signal voltage conditions. In said at least one audio enhancing circuit various techniques may be employed for channeling audio signals. For example, variable broadband filter circuits may be employed in substitute of a two or three-way crossover network circuit whereby said broadband filter circuit band and tune signals within a given broadband range.

An alternative procedure subjective to an aspect of channeling enhance audio signals or amplitudes of such signals in a communication system hereof may consist of at least two amplifier circuits or other audio enhancing circuits where at least three audio channels of the audio amplifiers are employed: one channel of the amplifier channeling the high range audio signals, one channel channeling the mid range audio signals and one channel of the second amplifier channeling the low range audio signals. An opposing technique may adopt a one channeled at least one audio enhancing signal component to constitute the audio enhancing communication method by applying one channel of enhanced signals to said communication apparatus whereby said one channel is able to channel designated generations of enhanced audio signals for disposing said enhanced audio signals to at least one channel of said communication apparatus thereof. Therefore, said at least one audio enhancing circuit externally driving at least one speaker system or full-range speaker. Under the terms and conditions that apply to the encircled application, as stated above, by absorption of contrast, an absorber of the provided application may take into account the magnitude of the enhanced acoustic quality value, which is apparent to actual psychoacoustics evaluation and is technically definite in terms, because the supplementary audio enhancing circuit or circuits that is connected to the communication system clearly discern a high degree of differential factors that separate the presented degree of refined audio tone of the provided acoustic enhancement communication system in comparison to the low traditional acoustic quality value of the conventional verbal-simplex or duplex communication systems hereof. In support of, the reproduction of high quality audio signals, accurate noise-free audio reproductive techniques may apply to this acoustical enhancement communication system for precisely mimicking audio signals in the at least one audio enhancing circuit herein. In addition, these technicalities may include complex acoustic generating circuits that are designed to generate complex waveforms that may consist of sufficient or all acoustic overtones, decay and rise-time details. This refine acoustical enhancement communication system may provide special oscillator circuits and sophisticated modulator circuits for improving the audio section or said at least one audio enhancing circuit which is tailored to be acoustically coherent with the communication apparatus hereof. For an integral submission of high acoustic quality content which may implement the tolerance of integrated component herein, via the submission of high grade or high class integrated component like capacitors, conductors, transistors, inductors, resistors and diodes that may be composed of high categorized potent materials may be applied to bring forth a degree of excellent quality to the above integrated components of this acoustical enhancement communication application in its entirety.

Appn. Number: 10/050,193
Appn. Filed 01/16/2002

Reply to Non-Compliant Amendment of 11/8/04 and
Office action of 8/8/05

Amendments to the Specification:

Please replace this section of the specification page [47 to page 67] with the following amended section of the specification:

Operation Fig. 7 to 10,
and Fig 3B

[47- 67] The operation procedure is provided for the at least one audio enhancing circuit, such as the crossover network circuit which consist of the at least one input port or input section for injecting microphone output signals and control means for controlling the microphone signals or/and the at least two other audio enhancing circuits, which forms the selective 1.3-way/3-way crossover/audio-filter/audio-preamp/ audio equalizer enhancement communication system with the dispensable coupling means for voluntarily coupling the acoustic medium from the communication system to the external reproductive acoustic system of the motor vehicle or the independent audio reproductive unit.

One would start operating the integrated acoustic enhancement communication apparatus by connecting the system for operation, which is illustrated in the pictorial view Fig. 7A and Fig 10C. From this aspect, the microphone **84** is provided as the acoustic source of interest. One must first hold the microphone's coupling medium **17** griping the plug **61** by it's shell then insert the plug into the microphone's external input **25** port **87,** located on one side of the integrated acoustic enhancement communication apparatus, **41** as illustrated in Fig. 7A and Fig. 10C. After the microphone is in, the coupling medium with the 1/8 inch plug may voluntarily be applied to the dispensable audio port at the bottom side of said integrated acoustic enhancement communication apparatus by gripping one end of the 1/8 inch plug's shell **72,** as illustrated in Fig 7B and Fig. 7E, and inserting the plug into the dispensable output **26** port **87** of the receiver section, located at the bottom side **68** of said communication apparatus. At the opposite end of the same coupling medium, shown in Fig. 7C and Fig. 7F, apply a connection to the input port **25** of the external audio reproductive system of the motor vehicle or other independent audio reproductive systems that is coherent to the application hereof. When the connections are through, press the power button on said communication apparatus to apply power throughout the entire system.

When audio signals input to said microphone, the signals flows throughout the integrated acoustic enhancement communication system then couples externally to the external independent reproductive system. Figure 3B, Fig. 1 and Fig. 1A illustrates the flow of a plurality of band audio signals, and Fig. 9 and Fig. 9A illustrates a single band of audio signals flowing throughout said integrated acoustic enhancement communication system. From the output terminal or output section of the microphone or acoustic source **84**, output signals from said microphone are applied to the audio enhancing circuit, such as the audio preamplifier circuit, the audio equalizer circuit, the three-way electronic crossover network circuit **47**, the tunable one-way-crossover network circuit or tunable digital/analog frequency-divider circuit or other audio enhancing circuits hereof. With the employment of the 3-way crossover network circuit, audio signals are then divided into three different bands of frequencies, illustrated in Fig. 3B. The high-range band of frequency **74** emits from the high band-pass filter circuit, the midrange band of frequency, **75** emits from the two element band-pass filter circuit and the low-range band of frequency **76** outputs from the one element low band-pass filter circuit.

The integrated audio enhancing circuits are capable of being select for operation, such as said audio preamplifier circuit, said audio equalizer circuit, the 1-way crossover network or tunable digital/analog frequency-divider circuit or said equalizer circuit. In this manner, when the 1-way crossover network or tunable digital/analog frequency-divider circuit is selected, it is capable emphasizing at least one or three specified magnetic field thereby driving at least one dual cone speaker or a various range speaker system. An the other hand, the operation procedure may employ an audio enhancing circuit, such as said 3-way crossover network circuit, which thereby provides at least three bands of audio signals adopted for driving a variable range speaker system hereof. The at least one band or three bands of audio signals are then applied to the input of the secondary audio enhancing circuit then input to the transmitter section **86**. From the output section of the transmitter, the audio signal makes another input connection to the input of a Hybrid Network. From said Hybrid network, signals are then injected to the input of the receiver section **85.** The same at least one band or three separate bands of output signals from said receiver section are applied to the output port **87**. When said output port is coupled with external audio cable, the signals are also voluntarily conveyed from the audio receiver section of the integrated acoustic enhancement communication system to a dispensable coupling medium **17** which then couples to the external reproductive audio system by injecting the signals into the (CD) Compact disc input socket, auxiliary section or other audio input sections **25** in which the audio signals are then reproduced by the external audio system which may be engaged with the motor vehicle, the independently audio system or the independent incorporated audio system hereof.

In that manner, the at least one or three bands of audio frequency signals are sent to the input section of the transmitter, in which the enhanced audio signals are transmitted to the adjacent receiving section of the communication system and the remote communication device. Thereby, the user is capable of magnificently communicating said enhanced audio signals to the correspondent at the opposite end, and said enhanced audio signals are capable of communicating high degree of acoustic quality audio signals thereby enabling superb perception in comparison to a common communication systems hereof.

Audio frequency signals in the telecommunication apparatus are controlled by the control means located on the external monitor section **71,** illustrated in Fig 10A and Fig. 10C. One can start adjusting the frequencies for operation by selecting a network of frequency for adjustment. Using your hands, grip the knob **82** of the rotary switch then twist said knob to the appropriate selected notch **81**. The variable master level control pushbutton switch **78** is used to vary the master acoustic level of the overall audio enhancing circuits of the acoustic enhancement communication device in respect to the selections of said rotary switch. As illustrated in Fig. 10B and Fig. 10C, press on the top end **79** of the switch to increase the master audio level.

Press on the bottom end **80** of the switch to decrease the master audio level of the audio enhancing circuits, which thereby affect the level of the acoustic enhancement communication system herein. Fig. 10C further illustrates the external monitor section **71** that includes display means **27** for displaying the current status and said external monitor section for monitoring said current status of the audio enhancing circuits that includes the first section **110** consisting of control elements for said 3-way crossover network circuit and said tunable one-way crossover network circuit or tunable digital/analog frequency divider circuit, which is located at the left side of the external monitor. The selection switch **119** is provided, which is employed to execute the common that enables the selection of the 3-way crossover network circuit and the tunable one-way crossover network circuit or tunable digital/analog frequency divider circuit. When said selection switch is switched to the symbol 3-W position, it indicates that the three way crossover network circuit is selected for operation, and when said selection switch is switched to the symbol 1-W position it indicates that the tunable one-way crossover network circuit is selected for operation. Adjust the 1-way/3-way crossover network's master volume unite **120** control element to vary the master volume of the 3-way/1-way crossover network or tunable filter circuit hereof. To vary the width of the band of frequency and to set the millisecond time interval, vary the band frequency band width/mSec. control circuit **111.** Vary the 3-way/1-way crossover network, or tunable filter circuit's external variable gain control element **118** to vary the volume of a band of audio signals of said 3-way/1-way crossover network or tunable filter circuit. A) Vary the external variable high frequency range control element **115** to adjust the high range frequencies of said 3-way/1-way crossover network or tunable filter circuit. B) Vary the external variable midrange-frequency control element **116** to adjust the midrange frequencies of said 3-way/1-way crossover network or the tunable filter circuit. C) Vary the external variable low-range frequency control element **117** to adjust the low-range frequencies of said 3-way/1-way crossover network or the tunable acoustic filter circuit. The external monitor section includes the second section **112** containing the control elements of other audio enhancing circuits, such as the audio equalizer circuit and the audio preamplifier circuit, in which contain variable treble control element **113** and variable bass control element **114**. On the equalizer's external monitor section, vary the preamp/audio equalizer's variable unit volume control element **120** to adjust the volume of a section or unit of audio enhancing circuit, such as the audio preamp/audio equalizer circuit. To vary or control the audio signals of the EQ/preamp circuit repeat step A), B) and C) on the second section of the EQ/PREAMP 's external control unit.

Summary Ramifications and Scope

Accordingly, one can see that: a communication system, such as a verbal communication system or a duplex communication system, such as a Telephone, Two-way radio, C.B radio, Amateur radio or other communication system hereof is comprising an audio enhancing circuit, such as an audio preamplifier circuit, an audio equalizer circuit, a crossover network circuit or other audio enhancing circuit consisting of at least one input section for inputting original audio signals from at least one output section of an acoustic source, such as a microphone, is provided. In addition, said audio enhancing circuit is able to be integrated with other audio enhancing circuit and provides at least one or at least two communication channels that is capable of channeling the enhancement communication procedure according to the selected mode of acoustic enhancement communication hereof. Furthermore, said audio enhancing circuit is capable of providing at least one integrated band or one integrated channel of audio signals or at least three bands of audio signals that are employed for banding and emphasizing audio signals entering said audio enhancing circuit for disposing the enhanced audio signals into at least one secondary audio enhancing circuit, such as a crossover network circuit other audio enhancing circuit and a communication circuit. Therefore, said audio enhancing circuit enhances said audio signals and respectively injects said enhanced audio signals into the communication circuit, such as a transmitter, which is capable of being connected to one of the at least two communication channels of said audio enhancing circuit hereof. Said secondary audio enhancing circuit disposes said enhanced audio signals to a hybrid network. From said hybrid network, said enhanced audio signals are then connected to the input of an adjacent receiver section which is capable of being connected to one of the at least two communication channels of said audio enhancing circuit, in which, thereby, enhancing, emphasizing and channeling impaired audio signals entering the adjacent receiver that emits from the adjacent transmitter and from a remote communication device. The receiver section may further includes a dispensable output port, output section or a wireless acoustic system having said output section adopted for voluntarily coupling with an acoustic coupling medium, that consist of an unessential integrated filter circuit to oppose a plurality of audio frequency. The coupling medium is employed for coupling with a motor vehicle's reproductive acoustic system or an independent extraneous acoustic system that is not affiliated with a motor vehicle. Said dispensable output port may be omitted from an exclusive acoustic enhancement communication system, and under these provided conditions the acoustic enhancement communication system will retain the concept of the audio enhancing circuit comprising the communication apparatus thereby sustaining the formation of the acoustic enhancement communication system hereof.

A reader may perceive that the technical acoustic configurations may individually use any preferred audio enhancing circuits for employing a mono/stereo, application or as the primary sequential circuit to constitute the acoustical enhancement section in the communication apparatus. During the conveyance of audio signals to the independent audio system in the motor vehicle, new cycles of audio signals are initiated repetitiously on reception. The inputted signals of said transmitter section, transmits the plurality of audio signals to a remote receiver, then to a remote user on the receiving end. A dispensable acoustic coupling medium combined with the autonomous receiving section may voluntarily be used to join the motor vehicle's reproductive acoustic system with the communication apparatus. According to the technical aspects of this acoustical enhancement communication application, apparently, the audio circuit that provides the acoustic enhancement procedure, as recited, is an audio circuit or a section of said audio circuit, such as a crossover network circuit, an audio equalizer circuit, an audio preamplifier circuit, an audio processing circuit, an audio filter circuit, an audio amplifier circuit or a miscellaneously multi-integrated circuit compact with more than one audio enhancing circuits or other multi or individually isolated or integrated audio enhancing circuits that is used to enhance the standard acoustic quality value of common communication systems to enhance acoustic quality value from said standard acoustic quality value hereof, thereby, improving audio efficiency, audio quality and performance. Furthermore, for the conveyance of high quality acoustic signals, which may range out of the specified limit of specific acoustic or/and communication spectrum, lineal acoustic technique and acoustic apparatus employing analog/digital or digital/analog transmission may be employed, or exclusive analog FDM or digital TDM multiplexing technique may be employ for communicating at least one band of the high quality audio signals over at least one communication medium.

One can also notice that an equilibrium control technique is employed for equivalent control, or an independent control technique may controversially be employed for independent control hereof. From this aspect, control means give a user options which include the ability of subjective control of audio signals, in which the user has the choices of improving or/and varying audio signals herein. The conjunction of a wireless communication apparatus with a motor vehicle's external reproductive audio system enables subordinate monitoring while operating a motor vehicle. The method of combining multiple band-ranged audio signals is adopted for channeling a plurality of band audio signals to a conservative and efficient one-channel lineal procedure of the acoustic enhancement communication apparatus hereof. The sound separation, acoustic emphasis and the gratification of high grade, high class substantial materials, such as resistors, capacitors, inductors, transistors and diodes brings forth good audio quality and endurance to the audio section of the communicating apparatus. Generally, the submission of mathematical formulas to the acoustic circuits herein, provide specific regulating emphasis to variable acoustic values of the acoustic circuits for improving the acoustic section of the communication system, and the mathematical formulas is utilized to determine quality factors or other characteristic values which may include simple acoustic integral circuit for an inadequate or inaccurate envelope procedure or sophisticated circuits with complex waveforms and techniques for mimicking the matrix of audio signals in a precise manner which may include sufficient or all overtones decay and rise time information of this acoustically enhancement communicative system. The voluntary combination of a communication apparatus, a dispensable audio port and an external coupling medium with an external audio system create a remote way of communicating audio signals to a user. A user can transmit and receive communication without occupying his or herself.

Furthermore advantages of the variable/invariable duplex /simplex mode audio enhancement section comprising the communication system, which may be comprised with means for voluntarily coupling externally include that :

- it eliminates the use of headphones or headsets that occupy a user's hearing and creates hazardous conditions;
- it is able to generate good quality, professional or advance quality audio signals that emulates from at least one verbal acoustic source or at least one general acoustic source and communicate the audio signals to the communication system in a manner in which the enhanced audio signals are technically apparent to a high degree, which thereby brings forth accurate definition, transmission and reception with higher acoustic dimensions thereof;
- it brings forth advanced methods of communication due to the ultimate comprehensive acoustical enhancement techniques that is technologically consistent with a broad field of communication systems, which may include broadcasting systems;
- it executes communication in an un-occupying manner and enables a touch-free way to communicate;
- it implement convenient lineal transmission;
- it can adjust audio signals to once satisfaction or once preference;
- it enables one to tune microphone incoming signals and microphone outgoing signals of a designated simplex or duplex communication system.
- It implements the use of stereo/mono phonic application that may consist of other acoustical improvable elements or circuits that generates realistic acoustic technology to a communication apparatus, such as a telephone, C.B radio, Two-way radio, Amateur radio, modem apparatus or other communication apparatus.
- It enables a user to vary audio communication signals internally or externally using an external audio system.

Although the description above contains many specificities, these specific factors should not be considered as a limit to the scope of this invention but as illustrations of preferred embodiments.

Digital or analog technique and apparatus may apply to this application hereof. A pushbutton switch may substitute for making subjective selections instead of a rotary switch. Audio pitches, tones or audio signal bands may be assigned to symbolic gestures or icons, such as rock, pop, jazz, classic et cetera, in substitute for other controllable features or characters of the communication system herein. Display mean may be used to display the current signal status of the acoustic enhancement communicational system thereby displaying signal configurations or settings according to the provided acoustic status. The audio enhancing circuits may be miniaturized or magnified into various dimensions for a specified installation closure. The arrangement of control elements of the audio enhancing circuits may be subjected to manufacturer modification, by either contributing to or omitting specified control elements hereof. The crossover network may be electronic or non electronic. The receiving audio-port may be coupled using a nonintegrated medium or said receiving audio-port may be exclusively omitted from this application hereof and as a result maintaining the at least one exclusively designed audio enhancing circuit comprising the communication system.

Additional reproductive elements may be added to or omitted from said at least one audio enhancing circuit or the at least one audio enhancement section, such as resistors capacitors, diodes, transistors, transformers, conductors and inductors, for exalting better performance and therefore producing refine acoustic communication. Elements of the audio enhancing circuits may be coupled in parallel or in series order depending on the specified characteristics of the relative application thereof.

Thus the scope of this invention should be determined on the appended claims and their legal equivalent, rather than by the given examples.